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ORRIS CORYZA

E. W. PHILLIPS, M. D.
Phoenix, Arizona.

Read before the Thirty-sixth Annual Meeting of the Arizona State Medical Association, in Yuma, Arizona, April 21 to 23, 1927.

Of all the allergic diseases, orris coryza is probably the one oftenest missed in diagnosis; or, if diagnosed, the one least adequately treated. A great number of physicians treat annually a few cases of hay-fever, using the commercial pollen extracts appropriate to the season and to the place, with varying degrees of success. They seldom test a seasonal case with a potent extract of orris root; yet an unrecognized orris sensitization complicating a pollen hay-fever, will ruin the result of pollen therapy. Many orris-sensitized patients have perennial and rather atypical symptoms, for which they consult the rhinologist: and he, intent on the pathologic changes with which he is specially qualified to deal, too often overlooks the allergic factor altogether. While most recent writers on allergic disease mention orris root as a cause of hay-fever, few give the space it deserves to an ailment which of late years has become distressingly common.

Referring to orris root, Duke[1] states that "patients frequently react to it, both clinically and cutaneously; in fact, more frequently to this than to any other single agent studied, except pollen." Cooke[2] found that 47 of 327 patients reacted to orris root. Rackemann[3] observed that 44 of 428 cases of vasomotor rhinitis "gave a definitely positive skin reaction to an extract of orris root."

Authorities differ concerning exposure to the substance. Referring to orris root, Duke states that "it is contained in the majority of perfumes, face powders, sachets, tooth pastes, tooth powders, and is even used occasionally as a flavoring material and as a dye." Miller and Taussig[4], on the other hand, do not mention it in their recent article on cosmetics. Rackemann, in the article referred to, exemplifies what is probably the opinion and the practice of most doctors when he relates that, of his forty-four patients reacting to orris root, "in only twenty-one cases has it so far been possible to prove, by relief from symptoms when face powder was eliminated, that this orris root was the cause of the trouble."

This essay is based on an effort, made in the spring and summer of 1926, to evaluate the importance of orris root as a pathogenic agent in a group of 105 women suffering from hay-fever. All of these women have been under observation at least one season, most of them from two to five years. Some were known to be orris-sensitive and had in preceding years received appropriate treatment.

TEST REAGENTS

For this investigation, potent and relatively stable 1:10 extracts of orris root were prepared: one with saturated salt-glycerol solvent (Clock), which, as Caulfield[5] notes, is slightly acid; the other with normal salt solution enriched by one-half of one per cent each of phenol and sodium bicarbonate—a variant of Coca's fluid. The ether-soluble aromatic extractives, which had been removed before making these extracts, were concentrated, re-dissolved, and saved for testing. After some delay, samples of the commercial extractives of orris were obtained. They were: oil of orris, tenfold; orris root, Florentine, concrete; oleoresin of orris root, and alcoholic tincture of orris root. "These are the four principal preparations used by perfumers for introducing the orris note into their aromatic compositions."[6]

METHOD OF TESTING

First, cutaneous tests were made with extracts of those pollens and dusts (including rice powder) to which the patient was exposed; also with the two extracts of orris root and the solution of the ether-soluble extractives. The perfumers' extractives were similarly tried on sixty-one patients, and they were used as an inhalation test, the patient sniffing at the uncorked bottles.

When the reaction to the cutaneous tests with orris preparations was negative or doubtful, intradermal tests with one or both of the two extracts of orris root were done, using as a negative control the solvent and as a positive control, when that was available, the extract of a pollen or dust to which the patient was known to be sensitized.

RESULT OF TESTS

The results of these tests are shown in Table I.

Of 105 women with hay-fever, twenty-five reacted positively to orris by the scratch test, while eight more, whose response to that test had been negative or doubtful, gave a positive reaction by the intradermal method. None reacted to rice. None reacted positively to the ether-soluble extractives, nor to the perfumers' exractives. In other words, nearly a third of the patients showed evidence of cutaneous hypersensitiveness to an extract of orris root from which the ether-soluble aromatics had been removed, and none reacted to the aromatic extractives.

Twenty-six of these orris-sensitive women reacted to pollen also, the pollen sensitization being probably the earlier. This point was not in doubt in the cases of five who, having been under observation for several years, had been observed to acquire an allergic response to orris root within the last year or two.

SOURCE OF ORRIS ROOT

Attempts to locate the source of the orris root were at first unsuccessful. Tests were made with soaps, tooth pastes, creams, perfumes and face powders belonging to the patients, nearly all with negative results. At first I shared the common belief that face powder is one of the chief causes of orris coryza, and was perplexed to find, of numerous sorts extracted, only one that produced a weakly positive reaction. Inquiries were then sent to the makers of widely advertised face powders. Out of eleven replies, only one admitted the presence of "from ½ to 1 per cent" of orris in product. Two others stated that they had formerly used orris root, but had discontinued its use in face powder. This was in agreement with the testimony of the patients, who declared that they used certain brands of face powder without annoyance. It soon became evident that the modern heavy face powder, though constantly dabbed on the nose, as a rule has nothing to do with orris coryza.

Further investigation revealed that the bulkier products, talcs and dusting powders and bath powders that are tinted and strongly scented, are the offenders. Extracts of several of these, and particularly of two well-advertised brands, produced brilliant reactions when tried on patients who were known to be orris-sensitive. It appears that powdered orris root enters into many of the body powders. Its function is primarily that of a perfume fixative, to take up and hold and slowly diffuse the essences of the scent employed; besides, it has an agreeable odor of its own, and a flesh tint.

The use of scented body powders has of late years been enormously increased by nation-wide advertising which has for its key-note "personal daintiness," with something more than a hint at the perceptibility of body odors. One learns that face powder is employed no lower than the neck. On the arms and chest, especially in the axillae, scented talc is applied. Many women dust themselves all over afer bathing, using a five-inch puff to apply the fragrant bath powder. The present styles of feminine apparel leave progressively more of the body surface to be seen and, therefore, to be powdered and the scant loose clothing permits the powder to fly in the air. Then there are the sachets, kept among the fresh linen, and usually containing orris root. A woman who happens to buy orris-containing powders, even though she may not use them to excess, in time produces for herself and those about her an adequate exposure to orris dust.

OTHER ETIOLOGIC FACTORS

Nothing about the personnel of the group studied indicates unusual exposure to orris powder. There was only one occupational case, that of an institutional nurse, whose duties included making the beds and handling the effects of women. She suffered severely, requiring a large daily dosage of orris extract to keep her comfortable while thus employed; when assigned to other work in the same institution she promptly became symptom-free. Two of the patients were school girls, aged nine and eleven respectively. Both these children had in previous years been completely protected from hay-fever by pollen therapy; but last summer they had to be given, in addition, injections of orris extract in order to obtain complete relief. The other women were of the prosperous well-dressed type so much in evidence in any American city and with no extraordinary exposure to powder.

Meteorologic conditions, as modified by climate and season, appear to have a marked effect on orris coryza. A number of these patients are accustomed to spend a part of each summer on the California

coast, where they experience marked relief. This is true of those sensitive to orris alone, as well as of those with multiple sensitization. Here the differences in temperature and in atmospheric moisture must be the deciding factors. Dusts are more buoyant in hot dry air. This point is emphasized by the fact that all but one of these orris-sensitized women sought relief from seasonal hay-fever. Of course, in summer women wear less clothing and more powder; but the quantity of powder that they inhale is also increased by the dryness and warmth of the air.

SYMPTOMS

While the symptoms complained of were those of seasonal hay-fever, suggestive differences in the history and in the course of the ailment were noted as between the straight pollen cases and those in which orris dust was an offending agent. The orris cases exhibit a certain irregularity: the dates of onset and relief do not correspond to the known periods of local pollens, and the severity of the symptoms varies to an unusual degree. This is noticeable especially in the case with mixed sensitization, in which pollen therapy only has been employed. Such a patient, on an adequate pollen dosage and with evidence of sufficient desensitization, is never quite comfortable and has occasional sharp attacks of hay-fever which make the whole treatment unsatisfactory. Also, women sensitive to orris root usually relate that they are subject to frequent and sudden "colds," which are apt to come on embarrassingly in church or at the theatre, or wherever women are gathered together in a confined air-space. It is interesting that only one woman of this series had appreciated the relation of her symptoms to the inhalation of powder.

The winter symptoms were described by most of the patients as colds—"one cold after another," several phrased it. While they shared with other hay-fever victims the marked susceptibility to nasal infections which Duke[1] has been at some pains to make clear, it is evident that many of their winter attacks were orris coryza. Most of those who received specific orris therapy report a relative freedom from winter colds.

TREATMENT

For several years I have refrained from advising orris-sensitive women to use no powder. The ones who need such advice will not for long follow it. It is impossible for a woman who goes about socially to avoid orris dust, even if she herself carries none. All those whose cases are here reported were carefully instructed to discard orris-containing products, and were furnished with a list of inoffensive powders. Yet only five went through the season without injections of orris extract, obtaining complete relief from pollen therapy alone.

Of the twenty-eight who were judged to need specific treatment, eleven who began to have hay-fever before their pollens were in the air, were treated from the start with a mixture of orris and pollen extracts. Ten of these got good results, one was not benefited. Ten others received the usual pollen dosage, supplemented by intradermal injections of orris extract whenever their symptoms so indicated. This method has the advantage of enabling one to judge the orris reaction by itself. Nine of this group obtained relief, one was relieved of her seasonal asthma but not of hay-fever. The seven who reacted to orris alone were all relieved by specific therapy. As would be expected from the perennial and irregular exposure, they showed a tendency to relapse.

The technic of orris therapy was similar to that employed by the writer[1] in pollen therapy during the attack. It is perhaps worth while repeating that specific treatment with orris root is nearly always, potentially at least, a coseasonal treatment. The individual's tolerance was first determined by skin tests, and the earlier doses were kept safely low. The interval between doses, at first one or two days, was gradually lengthened as the dose was increased. The dose was carried up to twice that at which relief of symptoms occurred, and held at that level for several weeks—in some cases, for several months. Desensitization to the point of abolishing the skin reaction was thought necessary in only one case.

Individuals varied widely in their degree of sensitization, and there was no fixed dose schedule. The initial injection was oftenest about 0.05 c. c. of a 1 :2000 extract, administered intradermally. The final dose varied widely: some patients required no more than 0.10 of the 1:50 glycerol extract to control symptoms, while one took 1.5 c. c. of the 1:10 alkaline extract daily for several weeks. The salt-glycerol extract was found to be therapeutically superior to the alkaline extract, though in skin tests their potency had been apparently the same.

COMMENT

In the small group of hay-fever patients here studied, orris sensitization was of considerable importance. The women sensitized to orris alone, suffered severely. While it was not always possible to determine to

what extent orris dust contributed to the discomfort of those multiply sensitized, its influence was judged to be sufficient to prevent complete relief by pollen therapy in four-fifths of such cases, and the use of orris extract in treating these patients was attended by excellent results.

Whether orris dust is so important as a hay-fever agent in other regions remains to be seen. The relief conferred by the damp air of the coast would seem to argue otherwise. But in most cities of this country women live during half of the year in the climate of the steam-heated apartment. According to Hubbard[9], this has an average temperature of 75° F. and a relative humidity of 19. Orris dust is buoyant in an atmosphere so conditioned, and it would be worth while investigating what part it plays in causing seasonal hay-fever, recurrent coryza, and obstinate rhinitis which is not definitely traceable to infection. But such an investigation will be worse than useless unless a potent and reliable extract is employed for testing.

Instances of sensitization to essential oils have been reported, and there is no reason why the aromatic extractives of orris root should not behave allergically on occasion, but such cases must be rare. This is probably the reason why, in a large number of tests, I have found few men who are clinically sensitive to orris. The scented toilet articles which men are now being taught to buy are mostly pastes, creams and lotions. The male does not use much powder, and even if he did, his clothes would prevent him from inhaling it.

It is significant that five patients were observed to acquire clinical and cutaneous sensitization to orris root during the years they were under observation. This can hardly be an isolated experience; it is what one would expect from the increasing exposure. Accurate statistics are not to be had, but it is estimated that in 1925 the women of the United States spent something between $115,000,000 and $250,000,000 for scented cosmetics, and the figures for 1926 are expected to be larger. So long as prosperity continues and the mode demands, women will use as much powder as they like, in spite of medical advice to the contrary. Nevertheless, the prevention of orris coryza can be accomplished, by the simple means of spreading the information that for all practical purposes sensitization is caused only by the powdered root. The manufacturers can be trusted to eliminate from their products a substance which is generally known to cause such an unbecoming ailment as hay-fever.

CONCLUSIONS

1. Orris dust, either alone or in association with pollens, is a common cause of hay-fever in women.
2. Powdered orris root is found in many talcs, bath powders and sachets; it is seldom present in face powder.
3. The aromatic extractives of orris, used in perfumes, are relatively harmless.
4. Orris coryza usually takes the form of seasonal hay-fever with irregular onset date and with marked variability in the severity of symptoms; in winter the exacerbations appear as frequent and sudden "colds."
5. Women who are socially active cannot avoid exposure to orris root.
6. Specific treatment with a potent extract of orris root relieves orris coryza.
7. All women with hay-fever, or with stubborn rhinitis not clearly traceable to infection, should be tested for sensitization to orris root.

TABLE I.

Positive reactions:	
To pollens only	68
To pollens and orris root	26
To orris root only	7
To pollens and animal dusts	1
To animal dusts only	1
All reactions negative	2
	105

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DISCUSSION

DR. CHARLES S. KIBLER, Tucson, Arizona, (opening): I have enjoyed this paper very much, and consider it a splendid piece of research work. I should like to emphasize, with Dr. Phillips, the importance of not being contented with the ordinary skin tests in treating asthma and hay fever. If tests are negative, they should be repeated in a few weeks and at a more favorable time, because many patients go through negative phases. Particularly

with all proteins that may be inhaled, if skin tests prove negative, one should resort to intracutaneous tests; in asthma and hay-fever many cases will be picked up by this method which, otherwise, would not be detected. We are finding that a much higher percentage of the asthma cases belong to the sensitive group than was formerly supposed; I believe it is not too much to say that seventy-five per cent of the asthma cases are in the sensitive group. Many observers believe this so strongly that they are taking all asthma cases and desensitizing them, whether they react to season pollens or not. I should like to emphasize one point and that is that no one can satisfactorily treat hay-fever unless he is somewhat of a botanist; you must know your local weeds and their periods of pollination, otherwise you cannot get good results. No patient should be simply tested with the various pollens and treated accordingly, because it is unseless to treat patients with any pollens to which they will not be exposed. I should like to ask Dr. Phillips if he has found any cases of asthma that he is satisfied are due entirely to orris root, and whether he has had cases of orris root coryza complicated by asthma also. I wish to congratulate Dr. Phillips, again, on a real contribution to allergy.

DR. D. F. HARBRIDGE, Phoenix, Arizona: Every once in a while the oculist gets hold of a patient with a conjunctivitis that he is unable to attribute to any of the usual causes. If we can prevail sufficiently on the woman to withhold cosmetics for a time and to remain from such surroundings as mentioned by Dr. Phillips, she recovers very promptly. Doubtless a percentage of these inflammations are due to the mechanical effect of the cosmetic, yet there is no question but that sensitization plays a very important part in a goodly number. Along this same line of thought may be mentioned certain types of lid-border inflammation due to some of the highly colored materials used on the eyelashes.

DR. M. C. HARDING, San Diego, Calif.: Have you had any experience with sensitization to adhesive plaster on account of the orris root in it? Some work has been done in connection with dermatitis from adhesive in orris sensitive people. I wonder if Dr. Phillips has had any observations along this line.

DR. CHARLES S. KIBLER, Tucson: One more point; the intradermal testing is not without having previously used the scratch test. In using the intradermal test, use one at a time and have the patient remain under observation for forty-five minutes, and be ready for allergic shock. Some deaths have been reported that resulted from using too many intracutaneous tests, with resulting shock.

DR. E. W. PHILLIPS, Phoenix, (closing): I have been treated very kindly in the discussion, and thank you. As to the old asthmatics and their sensitization to orris: I have some, not included in this report, who have in orris root one of their main sensitizations. In the southwest, agreeing with Dr. Kibler, I find that the asthma of adults is mostly from allergy to inhaled substances, and orris is one of the common dusts. I very heartliy agree with the statements about the intradermal test. In routine work, the skin test is done first and if the orris reaction is positive, no intradermal test with orris is made. In the treatment, this is begun with a dilution so low that it would produce only a faint or doubtful reaction on a cut. One may get a very beautiful shock by injecting full strength test solution in a highly sensitive patient;there are some people in Phoenix who could bear me out in that statement. Have seen one most fascinating case of orris asthma in a child; after testing with everything else, found that it came from the orris shampoo that the mother used. She had traveled to Egypt and elsewhere seeking climatic relief for that boy's asthma; and was carrying the cause of it with her all the time. I have not seen any dermatitis from orris, much to my surprise; the custom is now quite common to apply orris powder to the recently shaved axilla, but have not seen dermatitis in such instances; do not know why. I do not know about the reactions from adhesive plaster. Dr. Harbridge spoke of conjunctivitis; the orris cases do suffer a lot from conjunctivitis, because oftentimes when they are warm, they put some powder on the forehead. Another thing, baby powder may get into the eyes and produce conjunctival irritation.

DR. A. E. GALLANT, Los Angeles, Calif.: It is a known fact that certain kinds of adhesive on the market cause irritation. Orris root is extensively used in the preparation of adhesive plaster.

SURGICAL AND POSTURAL TREATMENT OF DIFFUSE PERITONITIS.

C. A. THOMAS, M. D.
Tucson, Arizona

Read before the Thirty-sixth Annual Meeting of the Arizona State Medical Association, held in Yuma, April 21 to 23, 1927.

The operative treatment of generalized peritonitis has, for several years, been more or less standardized, with an occasional new remedy or slight change in post-operative treatment advocated by some surgeon. The most notable of these are the administration of chlorides as advocated by Orr, Babcock and others, and the administration of glucose. Since the treatment has become standardized the mortality has also become standardized with a death rate around 50 per cent. Even those who recovered were subjected to a long course of invalidism and much distress. The great distress and high mortality raised the question of the cause, or causes, of death in this condition, This we endeavored to solve before adopting new methods of treatment.

All authorities agree that early deaths in acute diffuse peritonitis are due to the absorption of toxins resulting from the massive infection, with paralytic ileus and its attendant regurgitation and, soon, added absorption of toxic products outside the paralytic area, adding its quota toward the complete overwhelming of the vaso-motor system. Later causes of death are: first, toxic effect of acid products (acidosis); second, fatigue and exhaustion of nervous system; and third, insufficient fluids or nourishment, and lowering of blood chlorides.

An ideal plan of treatment for this condition, therefore, would be one that would meet and combat successfully each cause of death by (1) removing original foci and preventing spread of infection; (2) preventing and combating ileus; (3) protecting the nervous system; (4) nourishing patient and supplying deficiency of chlorides.

In outlining our present plan of treatment, we are aware that it sounds like a

radical departure from the present accepted plan of handling these cases, but we believe it meets, in a better and more sure way than any other method so far devised, the several requirements set down as necessary in attaining maximum results. In our hands our present regime of treatment has given far better results than the methods formerly used in the same class of cases. Our results are what make us bold enough to set forth this method as a superior one, though we are fully aware of the fact that the consensus of opinion today among the leading surgeons, is that conservatism even to the point of non-operation should prevail in the treatment of this condition.

Certain anatomical and physiological facts, we think, explain its rationality and will in a large measure account for the results obtained. In studying the blood and lymph supply of the peritoneum, we find the arterial and veinous trunks with their accompanying lymph vessels and glands arranged along the vertebrae from the diaphragm to the pelvic cavity. Contrary to a well-established erroneous idea, absorption does not take place more rapidly around diaphragm and upper abdomen, but along the blood and lymph vessels in the back and pelvis. The peritoneal cisterns are also in back on each side of the vertebrae. These, with the pelvis, form pooling places for pus or fluids in the abdomen when the patient is on his back. This pooling in areas of greatest absorption certainly is not to the advantage of the patient and should be avoided if possible. Further study shows the diaphragm attached to the cartilages of the lower six ribs in front and as low as the second and third lumbar vertebrae posteriorly. This fact causes fluids to gravitate to these low places, forming pools when patient is supine.

Consequently, we do not offer our method as a radical procedure but as a conservative one, based on proper anatomical, physiological and surgical principles. Neither do we claim to have discovered anything new, but, having seen some of the fundamental principles of this regime used in other conditions with success, we decided to adapt them to this very distressing condition, which we have done with a very notable reduction in our mortality and with more comfort to our patients. If we allow for the largest possible error of judgment in the selection of cases, we have cut our mortality in two and if our judgment has been good in our selection of cases we have reduced our mortality 75 per cent in a total of twenty-seven cases. We realize this number is too small for definite conclusions but in this number we have had but two deaths, one fecal fistula, and no hernias. One case was moribund and should not have been operated. This patient was operated under local anesthesia with a minimum of trauma but died two hours after removal from table. The other death occurred early in our series and it is probable that the drain was not properly placed. The fecal fistula ultimately healed without further surgery. All other cases escaped without any untoward complication, period in hospital was greatly reduced, and the illness attended with a minimum of discomfort.

Our routine of today was not adopted all at one sitting, but we have frequently added to and taken from and in many ways changed our procedure, and do yet, as occasion demands in any individual case, but these fundamental principles remain the same: (1) Abdomen is left open for rapid free drainage; (2) patient is placed on abdomen to assist drainage; (3) buttocks are elevated; (4) rectal alimentation is given and chlorides forced. We are not always able to determine the extent of involvement of the peritoneum previous to operation but if we are suspecting pus in the abdomen, arm ourselves with the proper equipment to deal with any emergency.

OPERATIVE TECHNIC

The usual incision is made approaching the pathology suspected. Survey of abdomen is made and original focus of infection is removed if it can be done without too great trauma to the viscera. If diffuse peritonitis is found, the original incision is extended, making opening from five to seven inches long. The peritoneum is dissected loose on each side, the full length of incision. This is then pulled up and out and attached to skin, throughout the extent of wound, with chromic catgut. This is done for the protection of the raw surface of the abdominal wall, as well as for future use. At this point the original focus of infection is dealt with.

Following this, a large piece of rubber dam with many perforations is laid over the wound and gently pushed into abdomen and filled with fluffed gauze in such a way as to hold all viscera within abdomen. In no place is the pack inserted deeply except in region of original focus of infection or in the pelvis, if there is a large accumulation of pus. No pus is mopped or swabbed out but every effort is made not to traumatize the viscera. No gauze is ever permit-

ted to touch the coils of intestines. No attempt is made to close the wound but it is purposely left open its full length. On top of large drain of rubber dam and fluff gauze, a very copious dressing is applied. If patient is under a general anesthetic, one or two quarts of saline is instilled into rectum while he is still asleep and before leaving operating table.

The patient is returned to bed and laid flat on abdomen, face to one side, arms in easy position about head, with legs arranged to suit the comfort of the patient. The main point is to keep the whole abdomen flat against the bed.

After a few hours (three or four) in this position, pillows are placed under lower abdomen and pelvis, raising buttocks high above rest of body, which position promotes escape of gas and allows easy instillation of fluid into rectum (see illustration) where

it is retained and absorbed in almost unlimited quantities. We use, largely, saline, with the idea of supplying deficient chlorides to the blood, as advocated by Orr, Babcock and others, but tap water and glucose solution may be used interchangeably with equal satisfaction, according to the indications. Why patients retain and absorb fluids better in this position can, possibly, be explained by the fact that water will run down-hill and the rectum being the highest point of the body in this position, fluids gravitate away from the sphincter into the full length of colon with its larger absorptive area and the desire to expel the fluid is lost.

Another thing this position does, which is of the greatest importance and comfort to the patient, is to prevent distention of the abdomen, or, if the abdomen is distended, it tends to reduce it. This is probably due, in part, to escape of gas per rectum, which so easily takes place with the vent at the highest point, but we think that the very rapid drainage and consequent checking in spread of infection, together with the constant firm pressure being exerted on the abdomen, prevents distention of the viscera, thus avoiding disturbance of the circulation of intestines, which is recognized as an essential factor in the formation of ileus.

There are two other advantages of this position: (1) It places our large dressing at the most dependent portion of cavity to be drained. (2) It leaves the peritoneal cisterns and pelvic cavity high and dry instead of leaving them to act as cesspools in the area of greatest absorption.

An extra word about this method of drainage. We concede that the greatest amount of drainage from the peritoneal cavity takes place in the first twenty-four hours. Moreover, we have observed that most of the drainage by this method takes place in the first twelve hours. The reason for the very large drain is to obtain a maximum amount of outflow the first few hours before adhesions have walled off the drain. Biologically, our drain touches a comparatively large amount of viscera, causing a reversal of lymph circulation in nature's effort to expel the foreign body, and in this effort drainage is promoted.

The patient is kept in this position and the large drain left in place from one to several days. At the end of each twelve hours, patient is turned on the back and outside dressing removed. The gauze drain is saturated with 1 per cent sodium citrate solution, large outer dressing replaced and the patient again turned on abdomen, with an immediate flow of drainage. This procedure is repeated twice daily until such time as the symptoms justify a change of regime. Usually after twenty-four hours some of the gauze is removed from the drain at each dressing until we have only rubber dam left serving as drain.

The time of closure of the abdomen requires judgment but is usually in from forty-eight to seventy-two hours and is easily accomplished in bed under local anesthesia. The peritoneum is losened from the skin and closed easily in the usual way. Only a small rubber dam drain is inserted for a few days; the remaining portion of wound is closed around the drain. Patient is again placed on his abdomen for the greater part of the time for a few days, being permitted to change his position more often and remain off his abdomen longer, until he has the freedom of his bed and can turn in any position he desires.

We might remark, in closing, that we have found that patients do not object to remaining on the abdomen for many days at a time. Furthermore, we have found that the elevation of the buttocks is applicable in all surgical conditions attended with ileus or abdominal distention and is so appreciated by patients with distention that, after having used it, they will frequently ask to be placed in this position on slightest discomfort from gas.

CONCLUSIONS

1. The mortality rate in diffuse peritonitis is too high.

2. Anatomical arrangement within the abdomen proves the theory of most rapid absorption around the diaphragm and upper abdomen a fallacy.

3. The long unclosed incision, with viscera held back by rubber dam and gauze arranged in form of large drain, superficially placed in abdomen, is not radical but efficient conservative surgery, taking into consideration both the biological and mechanical factors involved.

4. Placing the patient on abdomen with buttocks elevated and drain at most dependent part, promotes rapid drainage and prevents pooling of secretions at points of most rapid absorption.

5. Fluids administered per rectum will be retained and absorbed in this position in almost unlimited quantities. Distention is controlled, vomiting reduced to a minimum, obviating the necessity for frequent stomach lavage.

6. Patients suffer less, get well quicker and our mortality has been reduced at least 50 per cent in the twenty-seven cases observed.

DISCUSSION

DR. MEADE CLYNE, Tucson, Ariz. (opening): Dr. Thomas has had a very gratifying reduction in mortality. He has brought out some points that I am not familiar with, but in spite of this reported reduction in mortality, I am not prepared to accept the statement that absorption of the toxic material takes place more rapidly in the lower abdomen than in the upper. I should hesitate to place a patient who had had a recently ruptured gastric ulcer in the Trendelenburg position, even though the infection started in the upper abdomen. It seems to me that the mortality in these cases can be greatly modified by doing the least amount of surgery possible, with the smallest amount of manipulation. It seems to me that the proper treatment in these cases still is the sitting position with the proper drainage established in the pelvis, possibly with tube at site of the appendix and one in the kidney pouch, with some hot wet packs applied to the abdomen to promote immediate drainage; proctoclysis and hypodermoclysis as indicated, and morphine to give the patient comfort. This is a new procedure and I am not prepared to accept the theory or statement without some hesitancy, also because of the pain that some of these patients must endure in the abdomen, and pain certainly is a factor in the recovery of a sick patient.

DR. A. J. McINTYRE, Phoenix, Ariz.: Would like to say to Dr. Thomas that any one in medicine who goes after a thing the way he has, to reduce the mortality in peritonitis, deserves congratulation. If these results continue successful, as they have started, I believe a new field in surgery has been opened. We are always talking about conservation in medicine, but the radical man makes the advances. Treatment which is radical now may be conservative fifteen or twenty years from now.

DR. J. I. BUTLER, Tucson, Ariz.: I am reminded of a comment made at one of the large eastern universities, in talking over the educational difficulties encountered. that one of the problems was to save the students from the conseuqences of their own creative ingenuity. It may be that this is often the case in surgery. I have talked this matter over with Dr. Thomas, and in reporting better results, we must recognize the fact that these things have probably been gone through with before. Likewise, there must be an explanation which will tally with the results. I remember well the first report by Finney on peritonitis, with six cases and all were successful. He scrubbed the alimentary tract from one end to the other with gauze, taking off all the fibrin, in spite of which, the patient got well. He is very much chagrined now when that paper is mentioned, although in that series his results were striking. The question of posture has been gone through with, studied and tried. I remember very well in the Massachusetts General Hospital turning patients various ways, on the side, either end of the bed up, or either side up. We used the Mikulicz drain with the well-known pouch, which is almost identical with the one used by Dr. Thomas, though he uses rubber dam perforated. The best results from drainage in the after treatment were found to be multiple drains of rubber tube perforated as a rubber dam would be; placing secondary incision in the dependent portions of the abdomen where accumulations were known to occur; sewing up the original incision tight, making a secondary closure unnecessary and avoiding postoperative hernia. Patients were placed on the abdomen, which side depending on the location of the original infection. I have had no personal experience with Dr. Thomas' method, either leaving the incision wide open or placing the patient entirely on the abdomen. Theoretically, I should think the embarrassment to respiration would be a great objection to the prone position.

DR. WILLARD SMITH, Phoenix, Ariz.: Two or three things have occurred to me in connection with this paper. In the first place, the doctor spoke of conservatism. The true conservative is one who practices conservation; if Dr. Thomas saves fifty per cent of those who would otherwise die, that is conservatism. Second, Hilton told us about rest and pain; if you have a thing that hurts, splint it; Dr. Thomas splints the belly with the bed. Third, if you have something to drain, make a hole big enough to drain it through; Dr. Thomas has certainly done that.

DR. JOSEPH M. GREER, Mesa, Ariz.: Speaking about conservativism, it seems to me that Dr. Thomas' paper is not radical but really conservative. Apparently his method conserves lives anyway. The reason it appears radical at first, though, is because it is different. Many of these things have been done before. Many surgeons have placed their patients in different positions during their after treatment. Many surgeons have made large incisions, and many surgeons have left their incisions open. Dr. Thomas has very cleverly cordinated these different things in a systematic way and has been successful. The rationale of his treatment appeals to me all the way through, especially the lessening of septic absorption by not allowing septic fluid to collect in the back part of the abdomen. It

has been said that drainage is more physiological than mechanical, but I do not see why, in the first twenty-four hours anyway, the position as used by Dr. Thomas would not lend a great deal of help to the drainage problem.

DR. H. T. BAILEY, Phoenix, Ariz.: I think Dr. Thomas should be complimented on bringing this paper before us. I should like to ask Dr. Thomas whether, after a mastoid operation, for example, if one should wish to give proctoclysis, the position described would not answer better than the old time position.

DR. H. A. REESE, Yuma, Ariz.: Would like to ask what has become of the duodenal tube and duodenal drainage in such cases?

DR. J. I. BUTLER, Tucson, Ariz.: One more point in posture. The elevation of the pelvis can be accomplished by raising the bed instead of raising the patient. If you want the buttocks in the air, you can get the same results by raising the plane on which he lies. What, then, is the explanation of the superior end results which Dr. Thomas reports? Not in increased drainage which does not take place after the first postoperative three to six hours; not in decreased lymphatic absorption, because that is, in fact, facilitated by the distribution of pus over the absorptive lymph capillary area of the mesentery, which the abdominal posture obviously encourages. The other possible explanation which occurs to me is suggested by the observations in fluoroscopy of the large gut during instillation of a barium enema There is a distinct obstruction seen, even in normally flexible intestines, as the enema traverses the pelvic brim, with the patient on the back; this difficulty must be much greater with a distended, edematous intestine, as is present in peritonitis, and the kinking must be lessened by the prone position. It is possible that position alone, without the open incision, may yield equally good results.

DR. WILLARD SMITH, Phoenix, Ariz.: Since Butler has talked again, I want a second deal. Go back to first principles again. Since the belly was built for a quadruped, you must get the hind legs up, for physiological effects.

DR. R. D. KENNEDY, Globe, Ariz.: Dr. Thomas' operation and procedure is mechanically correct. I do not, however, believe his low mortality is due to the causes to which it is attributed—that the lower bowel is a cesspool. It is true that we get considerable absorption from there but not of toxic products. Nature has not given us a very abundant lymph supply along the lower bowel, and infection does not spread from the large bowel as it does from the small bowel. For that reason we have such a slow development of diverticulitis and other lesions along the large bowel. Our absorption takes place higher up. These patients do not die from absorption of toxins but from the breaking down of products in the small bowel due to ileus.

DR. C. E. YOUNT, Prescott, Ariz.: I think that Dr. Thomas should be congratulated on being able to bring this report in which he can show such results. All of us are not so fortunate when we begin to modify some procedure. Should like to know whether there is any extrusion of the intestine in that position, whether they can be retained and what effect he has noticed from stitching the peritoneum to the skin. What effect does the thickening of the peritoneum, which results from such transplanting, have in producing hernia or closing the wound?

DR. GEORGE A. BRIDGE, Bisbee, Ariz.: I had the privilege of reading this paper last night and was struck with the originality of the procedure. We have had good results with the old method of the Fowler bed, Murphy drip and thorough drainage Many surgeons like me, have had the experience of closing these wounds too tight, and though you may not lose the patient, you will have Nature's remedy of opening the wound wider. I asked Dr. Thomas last night the same question asked by Dr. Yount, as to the difficulty he had in retaining the intestines. He seems to have had very little difficulty. The rubber dam he uses he pushes well under the margins of the abdominal wound and on top of that the dressings, also well under the margin. I wish to congratulate him on this original operation and procedure following operation.

DR. A. B. COOKE, Los Angeles, Calif: I have been much interested in this proposed modification of the position for drainage which is more or less familiar. In my own general work I have used the Sims position with elevation of the bed, turning the patient partially on the side. The title of this paper as originally published was "Generalized Peritonitis." No case of generalized peritonitis gets well, no matter what procedure you use; if it is generalized in the proper translation of the word, that patient is doomed. Dr. Thomas, in discussion, used the term "diffuse peritonitis," which is a very different thing. One of the speakers referred to the Kansas City idea, which I believe is correct, that in these cases of diffuse peritonitis, where much area is involved, the thing that kills is the absorption because of the ileus of the small intestine. I think the idea advanced by the gentleman in Kansas City, of jejunostomy and placing a tube in the proximal portion of the small bowel, with the use of copious saline, is a life-saving matter. The methods of drainage outlined by Dr. Thomas are very excellent, but sometimes we do not have the means of constructing the perforated coffer dam. I recall operating on a close friend of mine for a ruptured diverticulu with diffuse peritonitis involving the lower half of the abdomen. I wanted to drain and used a pair of rubber gloves, spreading the fingers out below and leaving the wrist portions protruding and leaving the wound open. You have the ready means at hand always for adopting this procedure where you feel it is necessary.

Any man who has handled this class of cases as Dr. Thomas has and can show twenty-seven cases with a mortality of two, is entitled to consideration when he describes his method, because diffuse peritonitis usually has a mortality of fifty per cent. All kinds of bizarre ideas have been advanced, not to be classed with this rational one of Dr. Thomas. Some will recall that some fifteen years ago a Memphis surgeon advanced the idea in these cases of pouring the abdomen full of tincture of iodine and said that he had no deaths at all. Others have advanced the idea of pouring the abdomen full of ether. We must credit the statistics, but cannot tell how much the personal equation of the operator enters in, and I feel that I must sound this little note of warning, that I do not think the ideas advanced by Dr. Thomas, since general surgery has become so very general, ought to be adopted by the rank and file of us, because lack of familiarity with the method may cause us to fail to get these results, and perhaps inflict injury upon our patients.

DR. THOMAS, Tucson, Ariz. (closing): I wish to thank the gentlemen for the liberal discussion, and there are a few things I wish to emphasize.

Dr. Cooke mentioned jejunostomy. We have not had occasion to perform this since we have been using this method, and we very seldom use the stomach or duodenal tube. That is one of the things we have been able to avoid in most cases.

In regard to the extrusion of the intestines, we have no trouble whatever; they stay back after the first twenty-four hours without any trouble. In one case, at the end of the first day, I removed some of the gauze and a few hours after that had occasion to do stomach lavage, and did have a small knuckle of intestine extrude, but that is the only case.

Maybe the long incision is not the essential point in our regime, but one thing is certain and that is that you can pour into the rectum all the saline and glucose solution you wish. You can fill the patient with fluid; you can put in ten or twelve pints in twenty-four hours and it will stay. A pint every two hours is the routine after the initial quart in the operating room.

I got my authority about absorption in upper part of the abdomen from Hertzler and Deaver; I got the original idea there and do not have any hesitancy in accepting their teaching. I should like to pay respects to the Fowler position; if anyone ever got more than a quart of saline to be retained in the Fowler position in twenty-four hours, he has done better than I have.

With regard to pain in this position, patients are more comfortable than when they are sitting up with the belly distended. On the belly you do not get the distention, and if distention develops and you place them on the abdomen, the distention becomes gradually less. I should like to emphasize the point that we get rid of gas in this position, not only in peritonitis, but any postoperative distention can be relieved by this position. In one case we gave several enemas without results; following these the buttocks were elevated, and in a few minutes the enema and all went out with the gas. When you elevate the buttocks sufficiently, the gas seeks the high level and will go out. We use the position in any postoperative case with distention. Pain is minimized and the patients are comfortable. They think they are not, but if you turn them face up, they will soon ask to be turned back on abdomen. We always use morphine and do not depend entirely on posture, but the dose of morphine is small, usually one-sixth or one-eighth grain is all that is necessary. We lay great stress on saline and use large quantities. We use sodium citrate on the dressings, as we have done for many years. It keeps the secretions that accumulate on the dressings from becoming hard, and by keeping them fluid drainage is promoted.

REPORT OF SIX UNUSUAL CASES

M. C. COMER, M. D., F. A. C. S.
Tueson, Arizona

Read before the Thirty-sixth Annual Meeting of the Arizona State Medical Association, held at Yuma, Arizona, April 21 to 23, 1927.

The average man is so constituted, intellectually, that anything out of the ordinary is welcomed as a happy break in the corroding monotony of daily ilfe. By the unusual, our imagination is intrigued and, through curiosity, interest in our work is revived. Without further preamble, we can proceed with

CASE No. 1.

Screw-worm Infestation of the Nares.

A. E. C., aged 37, railroad brakeman, was the patient. Personal and family history was unimportant. On Friday, during the noon hour, he was sleeping beside a work train at Antelope Quarry, which is foothill country. He was awakened suddenly with a violent attack of sneezing. He reported for treatment Saturday night, to Dr. C. A. Thomas, complaining of nasal occlusibn. discharge, and intense headache over frontal region. He was admitted to the hospital Sunday morning, at which time I first examined him.

The discharge from his nose was copious and sero-sanguinous in character. An overpoweringly fetid odor was noted, even at a distance of three or four feet. Monday morning, at my office, we verified a provisional diagnosis by removing 130 screw-worms from the nasal septum and adjacent tissues. The patient had a very large septal perforation with ulcerated edges. During the succeeding three or four days we removed about forty-five more worms, about 175 in all, and discharged patient after one week, recommending at least one more week for convalescence.

The screw-worm fly is very common in certain sections of the southwest and seems to be especially bad in the foothill countries. The fly lays its eggs in living tissue, the eggs hatching a few hours thereafter. Instances of screw-worm infestation of the nares in man, are not uncommon and every doctor whose sojourn in the southwest has been at all extensive, knows of, or has treated, one or more cases. Screw-worm infestation of the nares requires, first, a pre-existing break in continuity of the nasal mucosa, and septal perforations, with their ulcerated crusted edges, offer a fertile field in which the fly may lay its eggs when given a favorable opportunity.

I wish to call your attention to the three main diagnostic points that label it beyond peradventure of a doubt: The continual and copious flow of sero-sanguinous fluid; the repellant, cadaverous odor that makes our labor with these cases such a trial; and, finally, the wiggling worm itself. The nasal discharge and odor will be sufficient evidence for diagnosis and your hand automatically reaches for the chloroform bottle to remedy that which your eyes and nose tell you to be insupportable with social existence. Chloroform, applied with cotton-wound applicators, quickly kills the worms and also serves as a very good local anesthetic. With the aid of a good light and long nasal forceps, the dead worms can now be removed. Potassium permanganate irrigations will help to rid the nose of necrosed tissue and will very materially reduce the odor. If your sense of the esthetic allows enough patience, you may, sometime within a week, return the individual to society with a nose not a great deal the worse for its experience as a fly incubator.

CASE No. 2

Persistent or Patent Thymic Duct.

Mildred, aged 5, was always well. When she was three days old, her mother had noticed a small crust on the front of her neck, to the right of the midline, in the infrathyroid region. At the time, this was thought to be due to a wound from pin used in clothing and was treated accordingly. About March 20, 1925, it was seen by a specialist but a definite diagnosis was not made. In July of same year an attempt was made to close what probably resembled, at that time, a sebaceous cyst. The parents were then advised that the trouble was due to adenoids and tonsils, and they were removed in November, 1926, The trouble remained unimproved. Some months later the child was referred to me for observation, by Dr. R. K. Smith.

In the infrathyroid region on the right side, was noted a small opening in the skin. The mother states

that in hot weather there is quite a lot of discharge of a muco-purulent nature, sufficient to soil clothing. There has never been the slightest sign of inflammation and no swelling except an occasional bulging preceding a period when discharge is noted. The mother has an opening at the same point in her neck, which leads to a small pocket from which she is occasionaly able to express a small quanity of milky fluid.

It so happened that quite recently I had read an article by Dr. Rudolph Kramer[1] of New York, published in the Laryngoscope, entitled "Lateral Cervical Fistula." This article was a report of a case almost identical with the case I am bringing before you and for that reason I was stimulated to further study of this condition. Through the opening in the skin we injected lipiodol, most of which passed through into the mouth, but a sufficient amount was retained in the tract to show up well in the picture.

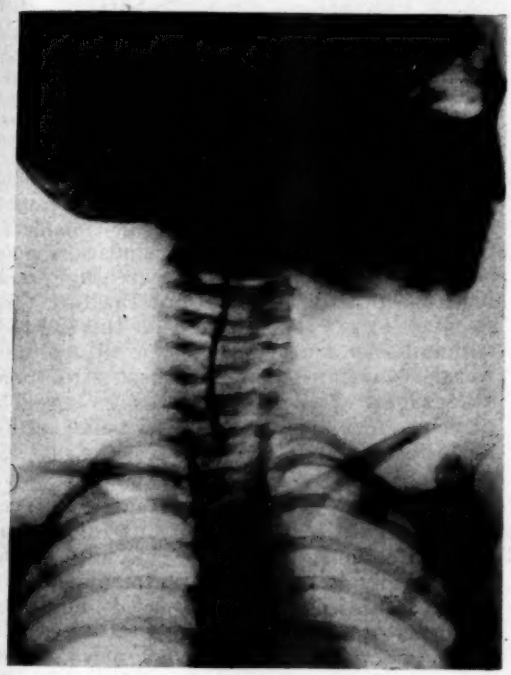

Fig. 1 Case No. 2). Persistent or patent thymic duct, outlined by opaque injection. This fistula is complete.

Quoting from Dr. Kramer's paper:

"Until 1913, branchial or lateral cervical fistula was thought to be due to failure of closure of one of the branchial furrows, but at this date Wenglowsky demonstrated the condition to be a patent thymic duct. This duct usually becomes obliterated about the sixth week of foetal life, starting from above downward.

"The fistula may remain complete or incomplete, internal or external.

"The external, or cutaneous, opening is on a line parallel to and overlying the anterior border of the sterno-mastoid muscle. The internal opening is either on the posterior palatine arch or directly in front or behind it.

"The treatment consists of complete dissection of the entire tract or the injection of chemicals in an effort to obliterate the fistula. The surgical procedure is fairly extensive, somewhat deforming and often unsuccessful."

Women, especially, do not easily forgive an eschar on the neck and, as the symptoms are not usually troublesome, they prefer to let well enough alone.

In a recent letter from Dr. Kramer he advises the injection of 100 per cent trichloracetic acid. When my patient has reached an age when she can cooperate, this procedure can be carried out, provided the injection be from above downward, otherwsie there would be too much danger of the solution entering the mouth and doing some damage.

The report of a case like this is valuable only in that it demonstrates the efficacy of the x-ray as an aid to diagnosis and reveals to us one of nature's blunders which, after our curiosity is satisfied, can be regarded only as an oddity.

CASE No. 3.

Sudden Death in a Child, Due to Ingestion of Uncooked and Over-germinated Beans.

R. H., aged 5, was always healthy. Family history was not obtained. He awakened nurse in the night with a peculiar gagging cough. This was repeated at another time during the night but nothing was thought of it. The next day he vomited once but there was no further cough and no hoarseness. The second night passed with but one disturbance due to the same peculiar cough or retching as in the preceding night. The next, or third, day he vomited once and seemed to be feeling all right. He was put to bed at about 7 p. m., but asked for a drink of milk, which was given him. He apparently strangled and was unable, or unwilling, to finish drinking. He lay down and turned his face to the wall. The nurse waited a while and then, thinking him asleep, left him. At about nine o'clock he was found in same position, dead and almost cold.

This case is reported for two reasons: first, because of a possible similarity to so-called thymic death; and, second, because of its rarity—if our diagnosis was correct.

I wish to state here that I believe many of the sudden deaths in childhood are ascribed to enlarged thymus merely because of a natural disinclination on the part of the physician to acknowledge that he does not know the cause of death. Medicine is far, indeed, from an exact science and we will lose no cast or dignity if we admit that we cannot always gage the balance maintained between life and death in any individual. In many cases it is far easier to fit the disease to the symptoms than the symptoms to the disease.

Postmortem findings in the case under discussion did not reveal any gross pathology in any of the viscera, nor any enlargement of the thymus. The only thing of which we felt at all positive was that death was due to the ingestion of some poisonous substance. The child's diet was that shared by other children in the house, with one sole exception. One of his playmates inno-

cently stated that he had seen this child eating raw sprouted beans three days before death. We passed this statement over without thought or comment, knowing, as we did, that sprouted beans were supposed to be rich in vitamines and, therefore, should be a valuable food.

It was only after reciting the case to Dr. R. K. Smith, our pediatrician, and being supplied by him with the proper reference that we were made to see it all clearly. From the Medical Interpreter, we note the following under the head of Vitamines:

"Cereal grains and legumes are entirely lacking in anti-scorbutic vitamines but do contain in their outer covering considerable amounts of anti-beriberic vitamines. If, at the end of three days after germination, grain is fed to animals, scorbutic symptoms are delayed, which action is attributed, by Furst, to a transformation of the anti-beriberic vitamine into anti-scorbutic vitamine, or water-soluble C."

"Germinating seeds for use in feeding should be allowed to remain in water for 24 hours and afterwards folded between moist leaves of bibulous paper at ordinary temperature. At the end of three days, lentils (beans) are boiled for 20 minutes." Experiments have shown that, when fed to animals, **"the young buds of seven days germination produce a violent intoxication and death in from three to five days."**

This latter paragraph is qualified by the statement that, "if we supplement the above regimen by normal grain or that which has undergone three days germination, nothing abnormal occurs. It seems that the toxic properties are neutralized by the anti-scorbutiginous substance."

Have we misinterpreted these statements and are we in error when we attribute the cause of death, in the case reported, to gastro-enteric intoxication due to the ingestion of uncooked and overgerminated beans? It is an interesting question to think about anyhow, and might stimulate an impulse in some of us toward a period of research, if only to prove that I am wrong.

CASE No. 4

Acute Pericarditis with Effusion, A Sequel to Sinusitis.

R. S., aged 35, married, male. Family history not obtained. When the internist was called, the patient was found to be suffering with an intense anginal pain over the precordia and radiating to the left arm and shoulder. His facial expression was very anxious and he felt convinced of imminent death. The pulse rate was 140, but regular. The temperature was 102 degrees; face was beaded with perspiration. No extensive examination was possible or advisable at this time, all efforts being directed toward making the patient more comfortable.

The next day a well marked friction rub could be heard with each heart impulse, the temperature remaining at 102 degrees and the pulse at 120. Pain was not so intense, probably due to the anodynes prescribed. By the third day the friction sound had completely disappeared and the heart sounds become distant. Percussion showed increase in size of heart outline. Pain had entirely disappeared and the only sense of discomfort was a slight feeling of oppression.

Ten days after the initial attack, the patient was referred to me for report on tonsils and sinuses. Tonsils were apparently normal but the sinuses on the left were suspicious. X-ray findings were: Left antrum cloudy almost to capacity; left ethmoid slightly cloudy; the sinuses on right were clear.

Preoperative diagnosis was pansinusitis, left, and pericarditis with effusion. Left antrum was entered with trocar under the inferior turbinate and irrigated. A large amount of foul-smelling miscible pus was evacuated. Irrigations were repeated daily until the returning solution was clear for three consecutive days and again after one week, when all evidence of infection had disappeared. The nose at this time appearing normal, the ethmoids and sphenoids were not disturbed. The heart condition had completely cleared up and the patient was happy. He was discharged with no assurance that condition would not return.

The best thing about this case would seem to be the happy ending. We might draw a valuable lesson from its consideration, in that the para-nasal sinuses should never be overlooked when searching for a focus of infection. In spite of the fact that so much stress is being laid on this subject —that books are being written all over the world regarding disease in these structures —consideration of the sinuses as possible primary foci in infection, is being sadly neglected and, in many cases, totally ignored.

We are very fortunately situated, in Tucson, in regard to the clearing up of respiratory infections. Sinuses, especially, yield most kindly to a line of treatment that, in other localities, with increased humidity and greater extremes in temperature, would prove a failure. Radical operative measures are the exception there and, should the condition be such as to demand such a procedure, then quite likely the patient will not be improved thereby. The failure to cure in these cases is no doubt due, in great part, to the probability that the sinus pathology is not a separate entity but a part of some constitutional disorder by which the resistance is held below par and involution of the local disease process made an impossibility.

Surely the sinuses with their great absorptive areas, deserve equal attention with teeth and tonsils.

CASE No. 5.

Death Due to Furuncle of Anterior Nares.

Mr. X., aged 30, married. Family history unimportant. Complained of severe pain and swelling in and about the vestibule of left naris. Inspection revealed a deep-seated local infection near tip of nose, which was open and discharging externally through

skin. The left side of face was badly swollen and the patient looked very ill. On questioning, he admitted that he had been squeezing and picking at the lesion in an effort to evacuate the pus. A dressing of phenol, ichthyol and glycerin was applied and patient was advised that he had been very unwise in traumatizing the furuncle and that the condition was serious.

I never saw him again but was very kindly furnished the record of his terminal illness by the attending physician. His death occurred within a very few days after his visit to my office and the records show a typical picture of general septicemia involving the peritoneum and ending in pneumonia. Had a necropsy been held no doubt there would have been revealed a septic thrombosis of the cavernous sinus with septic infarcts in the lungs, kidneys, spleen and heart muscle.

This case is reported as an example of the fact that small furuncles about the upper lip and nares may produce very serious complications. Dr. J. William Hinton[3], of New York, has this to say regarding the danger of infection about the face:

"In active hospital service one sees one or two deaths yearly from maltreated face infections. The fatalities do not result from medical procrastination, but from overzealous surgical intervention. The danger of infection is producing a thrombophlebitis of the facial vein, with a resulting cavernous sinus thrombosis."

Dixon[4] cites four factors in the production of complications in this locality: First, early and frequent trauma; second, absence of subcutaneous fat on the upper lip; third, active muscular supply of this region; fourth, inability of the veins that drain this region to collapse. In regard to the facial vein, Gray[5] states that it is not so flaccid as most superficial veins, has no valves, and communicates freely with the intracranial circulation.

"These facts have an important bearing upon surgery of some diseases of the face, for, on account of its patency, the facial vein favors septic absorption and, therefore, any phlegmonous inflammation of the face is liable to set up thrombosis in the facial vein, and detached portions of the clot may give rise to purulent foci in other parts of the body."

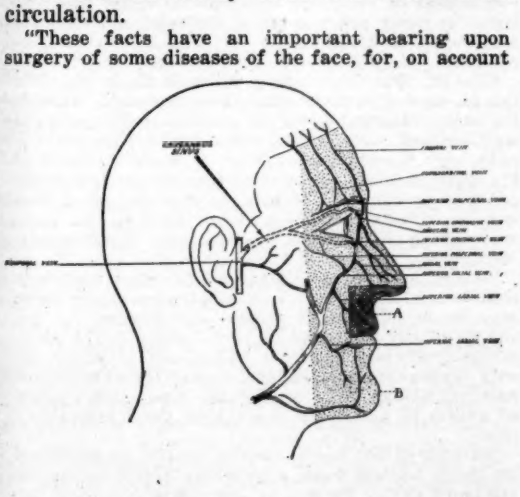

Fig. 2. Case No. 5). Illustration from article by Dr. J. W. Hinton, Annals of Surgery, Jan., 1927). Area (A), marked by heavy dots around nose and upper lip is the "Critical Area" of face infections. Area (B), marked by lighter dots, is the danger zone for face infections.

In the drawing you will note the distribution of the venous blood supply about the face and can see a direct connection from the facial vein to the cavernous sinus. You will note one heavy outlined area about the upper lip and nares which Dr. Hinton designates "the critical area of face infections." The light dotted area is the danger zone of face infections, the venous drainage of which connects with the cavernous sinus.

Any infection about the danger zone should be treated as if it might become a dangerous disease and traumatism by squeezing or small inadequate incisions should be avoided. This is one condition where a poultice is justified. The infection usually localizes with conservative treatment and will, in most cases, spontaneously perforate through the skin or mucous membrane.

I wish to say that the drawing exhibited is a copy from an illustration used in Dr. Hinton's article and is not original in any particular.

CASE No. 6.

Mastoiditis, Acute Purulent, without Demonstrable Pus in Middle Ear.

Miss R., aged 15; family and personal history unimportant; came complaining of severe pain in and about left ear, of three days duration, following an attack of influenza. A variety of home remedies had been used with no results. Inspection of ear revealed a perforated drum with a slight amount of pulsating fluid, serous in character. No bulging of the drum was noted, in fact, the membrane seemed rather flaccid. The posterior-superior wall of the canal was markedly drooping. Pain was constant, intense, involving the whole side of the head and unrelieved by any medication to ear. Deep pressure over mastoid antrum, the emissary vein and tip, revealed extremely tender areas, that over the tip perhaps being the worst. The temperature by mouth was 100 degrees, 6.; pulse, 124. The blood count showed: leukocytes, 8,550, with 79 per cent polymorphonuclears. X-ray findings were: All cells cloudy with a particularly dense area at one point.

The blood picture would go as well with an ordinary purulent otitis media and is that which we would expect in an acute uncomplicated mastoiditis. The ratio between the pulse and temperature ran true to form and only the ear with the discharge was out of tune with a typical mastoid. Had the discharge ever been appreciable in amount and had it ever been purulent in character, then, truly, would the picture have been complete. In practically all severe cases of purulent otitis media, the mastoid is affected in varying degree. All "running ears" should be regarded as possible mastoids that may require operation and we should be on guard for the danger signals that, once rec-

ognized, allow for no procrastination. The sudden stoppage in drainage, the increase of pain and jump in pulse rate with a possible elevation of temperature, changes the ordinary discharging or abscessed ear into a mastoid that is going to need attention.

This case presents one or two peculiar angles from the standpoint of diagnosis and indication for operation. It is different from the routine case of acute mastoiditis in that, although the tympanic membrane was perforated, the only discharge ever found in the external canal was a very small amount of pulsating serous fluid with never the slightest admixture of pus. With this picture in mind we had reason to believe that we were dealing with a streptococcic infection and, in all probability, would not find occult pus in the mastoid cells.

At operation no infection could be demonstrated in or about the antrum, but when we uncovered a large cell near the tip, pus under pressure made its appearance. The pyogenic membrane lining this cell was curetted out en masse and, in line with the present trend of opinion regarding simple mastoidectomy, we assumed the operation to be complete, conquering the desire to break down all cells and leave the bone wound smooth. We felt that in this case the foci of infection had been reached and dealt with, we had convinced ourselves of the patency of the additus ad antrum and were assured of ample drainage. From experience we knew that granulations would spring much more easily and quickly from the rough interior of the bone than would be the case were it overoperated by any polishing procedure.

Whether to operate or not and, if so, when, is an individual problem in every acute mastoid. When you are satisfied that drainage is insufficient then operation is in order. Experience plus the personal equation in both surgeon and patient, seems to furnish the only real qualification for a suitable rule to guide us when trying to decide what is best for the patient.

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DISCUSSION

DR. JOHN J. McLOONE, Phoenix, Ariz. (opening): Dr. McLoone was supplied with a copy of this paper, by the author, prior to the convention, and submitted the following discussions:

Case 1. Cases of screw-worm invasion of the nose that present themselves early are easily and satisfactorily dealt with. The outlook is more serious in others which do not come under observation until extensive destruction of tissue has taken place. I recall one case in which the maggots had pervaded the ethmoidal regions to such an extent as to effect their almost complete destruction, and found their way into the sphenoid and frontal sinuses. The patient was toxic and at times delirous. During several sittings, almost 200 worms were removed from ethmoidal regions and neighboring cavities. I recently treated a small child whose external auditory canal was found filled with screw-worms.

This distressing affection is most commonly met with in those who are already the victims of ozena, syphilitic disease of the nose, and other purulent nasal affections, the flies being attracted by the fetid odor to deposit their eggs in or near the nasal cavities.

Case 2. The thyro-glossal duct is an obsolete embryonic canal, extending from the foramen cecum, at the base of the tongue, downwards behind the hyoid bone, to terminate undernath the deep fascia in the front of the neck, in the neighborhood of the thyroid isthmus. A fistula or a cyst, when it calls for treatment, must be carefully dissected out in its entire course. Failure to obtain a perfect result is generally due to the difficulty of following the duct behind the hyoid bone.

Case 3. In view of the negative postmortem findings, I believe the essayist is correct in his diagnosis. Occasionally we see patients in need of removal of tonsils and adenoids, whose appearance would indicate a generalized lymphoid enlargement. It is advisable in those cases to have an x-ray made before doing any surgery, to determine if there be present any enlargement of the thymus gland.

Case 4. Cardiac disturbance due to sinus disease, though rare, does occasionally happen, and the recognition of the sinuses as foci of infection was certainly a fortunate circumstance in this case. I quite agree with Dr. Comer that the nasal accessory sinuses are too frequently overlooked as possible portals of entry for systemic infections.

Case 5. It is hardly necessary to emphasize the importance of avoidable incisions for nasal furunculosis. It is my practice to use dry heat or bichloride compresses in these cases. A combination streptococcic and staphylococcic vaccine is also beneficial.

Case 6. The interesting point of Case No. 6 is the absence of typical middle ear symptoms, though the other classical signs of a mastoiditis are quite well defined. From the amount and character of pathology found at operation, I would judge that his mastoid infection occurred possibly several weeks previous to the onset of pain, or that there had been some ear involvement at a former time, in this manner making the mastoid less resistant to subsequent infection.

A very marked middle ear suppuration may be a concomitant symptom of mastoid disease, or there may be no history of middle ear disease, no discharge at any time, and no perforations in the membrana tympani. I reently had a case in which the only symptoms were tenderness over the antrum and pain radiating over side of face. Operation disclosed extensive pathology throughout the mastoid process.

Absence of pus in the middle ear can be explained by there having been a previous infection in the tympanic cavity by way of the eustachian tube. After the bacterial process has extended into the antrum or mastoid cells, the infection in the middle ear becomes quiescent, while the bacterial invasion still continues in the smaller cellular spaces.

DR. H. T .BAILEY, Phoenix, Ariz.: I want to emphasize what Dr. Comer said about symptoms, when he was discussing his first case. When your patient comes, he will have a sero-sanguineous dis-

charge, with headache, and may have pus or mucopus exuding from the nose. You will likely get a history that yesterday,or two days ago, he was sleeping some place in the open, either in a room without screens or outside. If you look further you will often find that this patient had an atrophic rhinitis with scabs or an ozena of some type, with the odor which goes with it, perahps only an eczema or common form of catarrh of the nose.

I have had a few experiences and might relate one or two. A white girl 12 or 13 years old, daughter of a dairyman. The children help milk the cows and as they work very early in the morning, they get tired and take naps in the afternoon. This girl came in with a discharge, headache and the other symptoms spoken of by Dr. Comer, and twenty-three worms were recovered. One of my first cases, about 12 years ago, was a white boy with a scrosanguineous discharge, headache, high fever, delirium, and in coma part of the time. From this child we recovered 293 worms, not all from the nose; some had passed into the stomach; recovered eight or ten from the feces by watching the stools. I took some of these worms, made up some chicken broth with a few pieces of the meat, put this in a jar with the worms and in eight days had just so many nice green flies. A word about the flies: we get the screw-worm proper from the blow-fly, using the word of the cattle men. It is a large fly intermediate in size between the house fly and the horse fly. When he gets into a residence, he buzzes almost as strong as the horse fly. This fly, instead of laying eggs, lays worms. If you have a wound or any fetid material, the fly will lay its worms in it, and as soon as they are deposited they will begin to crawl. The green fly lays eggs and it takes some hours for these eggs to hatch. The worms in the first case reported above were from the green fly. Just two years ago I had a Mexican child brought from Chihuahua; some one saw her and thought she had meningitis from the symptoms; the child was very sick and toxic, ond from her we recovered 123 worms which seemed to be of the screw-worm type. Dr. Stroud is to have a paper on this subject and he will tell us something about the points of difference between the worms. The name "screw-worm" was given by the cow men of Oklahoma and other southwestern states, where they did so much injury to calves that had been castrated, and is due to the boring motion and the resemblance of the body to a screw. In getting the worms of the nose, my experience has been that when the light is thrown into the nostril, the worms will begin to move and they are then easy to see and pick out.

DR. R. D. KENNEDY, Globe, Ariz.: Confirming what Dr. Bailey said about the flies deposting live worms: I had a patient who, after sleeping half an hour, woke up, sneezed and blew a fly out of the nose. Within half an hour he was in my office and in the nose, which was perfectly healthly, there were about a dozen small live worms.

DR. J. I. BUTLER, Tucson, Ariz.: One point I wish to bring out in the treatment of such meningeal conditions as apparently followed this infection of the face. We know that destructive pathology depends on stagnant circulation and the method has application in other edematous sluggish circulatory conditions. I refer to the use of fifteen per cent sodium chloride solution as a depleting measure for any edematous tissue, particularly in locations that are inaccessible otherwise; for instance, all meningitis and encephalitis cases, alcoholic and wet brain cases, conditions that are entirely inaccessible to therapeusis outside of this method. In brain surgery cases, a tense brain becomes flexible and permits manipulation. Possibly it could be, and should be, used in mental cases, especially acute conditions due to intracranial pressure. It could be used in thrombosis, sinus cases and any condition where tissue depletion is indicated.

Question: How do you use that solution? Answer: Intravenously, 100 c.c. of fifteen per cent sodium chloride.

DR. COMER, Tucson,—no closing discussion.

MYIASIS IN THE SOUTHWEST, WITH PARTICULAR REFERENCE TO THE SPECIES CHRYSOMYIA MACELLARIA.

R. J. STROUD, M. D.
Tempe, Ariz.

Read before the Thirty-sixth Annual meeting of the Arizona State Medical Association, Yuma, Arizona, April 21 to 23, 1927.

When death occurs from an unusual cause, more interest is manifested in that cause than when it occurs from common diseases. Even if a death did not occur, the fact that sixteen cases of "screw worm disease," none of them referred cases, have been seen by a general practitioner in thirteen years, brings to us in the southwest the fact that these cases are common.

Myiasis is a fairly common disease which, in this continent, is prevalent from Canada to Patagonia, and which is more frequently encountered in altitudes below seven thousand feet, and especially in the hotter portions of the countries involved. In this southwest, the hottest portion of the United States, the occurrence is greater than in other parts of the country and it behooves us to be on the alert, not only to diagnose and treat early, but to urge preventive methods for its control.

Several species of flies have been known to cause the disease. **Sarcophaga** have been known to deposit eggs or larvae in the body cavities. **Stomoxys calcitrans,** which is seen in stables, usually attacks mammals and may attack man. The common housefly may cause myiasis mucosa, and the bot-fly or gad-fly, myiasis cestruosa, causing symptoms, especially in horses, by being parasitic in the stomach; this has been known to man also.

The species which causes most of the trouble and which uses man as a special host is the **Compsomyia macellaria,** or **Lucilia macellaria,** or more commonly known as **Chrysomyia macellaria.** (See figure.) This species shows a distinct preference for the nasal cavity, although often attacking the aural cavity, or any other part where the skin has been puncutured, especially when ulceration is present. The fly is attracted by the foul odor of catarrh or pus and usually deposits eggs, but has been known to deposit larvae in the parts. It takes but a few moments for this to be done, and flies have deposited eggs or lar-

vae without alighting, while still on the wing. Eggs deposited by the fly hatch out in one hour. They can make their way into the sniuses, middle ears and brain cavity. The pupal stage is reached in eight days, with a subsidence of symptoms if the patient should live that long.

While foul odors and infected places are usual, a great percentage of cases are "blown" which have been free from disease. It has been claimed that syphilis was always present, but this is not borne out by my own observations or that of others, although syphilitic rhinitis would certainly attract the flies. Ballenger mentions a case of bone necrosis from syphilitic rhinitis in which a man inhaled a fly in one nostril and immediately blew it out of the other, but became infected. Ulcerated superficial cancers are prone to be affected because of the odor present.

Most of the infection occurs while the person is asleep, and all of the nasal cases in my series have been in Mexican people who sleep in the open, often in the daytime. Most Indians and a goodly percentage of Mexicans get along very peaceably with flies, and make little attempt to control them in or out of their dwellings. These houseflies make it easy for other species to pester them unmolested. Besides this, the "jerky" meat, which hangs in most Mexican houses of the lower class, would attract these flies.

SYMPTOMS

Within twenty-four to forty-eight hours, when the nose has been attacked, there is noticed a "fullness" between the eyes, accompanied by pain. The pain and swelling are more to the side which is affected. This is accompanied by a thin watery, bloody discharge, which increases until the severity of symptoms, or the spitting or sneezing out of one or more larvae, brings the patient to a physician. The bloody, watery discharge is the most characteristic early symptom. The pain and swelling are variable, being much greater if the larvae have gone below the mucous membrane and are burrowing there. The larvae develop very rapidly, being, in twenty-four hours, only one-fourth inch long but growing, in three to four days, to an inch, with a diameter equal to their length the first day.

Examination at this time will disclose a very foul odor, as a rule, with the larvae seen in motion in the affected side of the nose. When the larvae are not seen, a sense of movement in the nose is seen, which clinches the diagnosis. Fever of a mild degree is common, but in the virulent cases it is high, reaching 104 degrees. Restlessness is common because of pain and the larval movement. Photophobia and conjunctivitis may be present.

When the larvae have been removed, the nose still looks broadened, due to the disturbance of the parts which have been stretched to accommodate the ever-growing mass of worms. The septum is usually forced towards the opposite side and ulceration is generally present. All of this clears up quickly as soon as the worms are cleared out and simple washes are used. The septum can be replaced easily by pushing from the opposite side and leaving a plug of gauze in for twenty-four hours.

TREATMENT

As soon as the worms are discovered, they should be treated with chloroform douches, 25 per cent to full strength, simple douches and forceps. Most of them can be reached by forceps, and plugging the nostril with cotton saturated with chloroform will kill the rest, which will be coughed or sneezed out in a day or so. In children, chloroform should be given to cause anesthesia in order to remove the worms by forceps. Carbon tetrachloride is as effective as chloroform and is more easily borne by children. Douching with this drug brings hidden worms out very quickly. If the worms have penetrated beneath the mucous membrane and are seen burrowing there, opening the membrane under cocaine and freeing the worms is advised, as this is the dangerous type of the trouble. When the worms are cleared out, an alkaline wash, with tampons of argyrol or neosilvol, will care for the ulceration present.

COMPLICATIONS

The most dangerous complication is meningitis caused by ulceration, the larvae burrowing under the membranes and lighting up microbic infection which passes up through the cribriform plate of the ethmoid bone. This may be a simple type and localize, or a septic type going on to death. The treatment is that of any meningitis. Necrosis of nasal bones may be primary and its extent enlarged by the trouble. If non-syphilitic, operation may become necessary, and if syphilitic, the condition clears up when appropriate treatment is given, usually.

PREVENTION

Screening aganist flies, or covering the face with netting thick enough to keep the nasal cavities from being attacked, is the best line of prevention. It seems as if something could be done to dispose of dead animals quickly after their demise. It has been my observation that animals dying on

the open range carry hundreds of thousands of these maggots, and no attempt is made to dispose of the carcasses. Even in the countryside, in the settled parts and in the smaller towns, I have often seen dead animals left to become fly-blown and allow thousands of flies to be hatched out. My experience is that 100 worms, or more, are average in the nose, so millions could come from the flies of maggots in one dead animal. Disposal of garbage, especially in country districts, could be taken care of better.

CASES

Of the sixteen cases seen, four, or twenty-five per cent, were in other locations than the nose, with no ear cases. This preponderance in the nose is the more dangerous when complications can be expected. One case was in a girl of seven, following a small scratch below the right ear. It was further opened and a plug of chloroformed cotton pressed against the opening and held there. Three days afterward, some worms came out. A cowboy was drunk a few days after being "hooked" in the buttock by a steer. The wound became exposed and was followed, in forty hours, with screw-worms. They were easily cleaned out and chloroform completed the work. A boy of four had a small laceration of the arm, treated with iodine. In a few days it was sore and, on being opened, showed infection with maggots. One could be seen crawling under the skin two inches from the wound. This gives an idea of what can happen in the nose. The other case was that of a carcinoma of the cheek and nose where the fly evidently placed the eggs outside of the nose. The worms were small when first seen and were easily destroyed. A peculiar thing about this series is that all of the nasal cases were in Mexicans while all of the others were in Americans.

The series follows:

(1) This case had a syphilitic nasal necrosis. The worms came out through the cheek, one inch from the ala on the left side. Antisyphilitic treatment took care of the bone necrosis. This was the third attack in three successive seasons.

(2) Nose looked as if he had broken saddle of hereditary syphilis. Negative Wassermann.

(3) Seen on the night of Sept. 3, 1926. Great pain, photophobia, and swelling of the nose on right side; tenderness over swollen area; nasal cavity negative to inspection. Had been sick only 24 hours. Temperature, 104.2; pulse, 90. Sept. 5th, he came to office and inspection showed a few maggots. Nine were taken out. At this time neck was slightly stiff. Temperature, 102.3 and pulse 110. (Would not go to hospital.) Sept. 6th, showed slight Kernig sign with neck stiffness, and was very restless. Three maggots came out in the night. I saw movement under the mucous membrane of nose high up on the septum. Opened it under cocaine and let out four maggots; could find no more. He had been given douches of chloroform in emulsion with oil, alternated with carbon tetrachloride, without avail. On Sept. 7th, showed signs of rapidly spreading meningitis; partially unconscious. Spinal tap showed very little extra pressure of fluid although instrument was used. Fluid was clear, but not sent to laboratory. Restlessness hard to control with drugs. Sept. 8th

Figure 1.

Figure 2.

Figure 3.

(The above cut is copied from the paper of Drs. Yount and Sudler, which appeared in the Journal American Medical Association, Dec. 7, 1907. The drawings were made by Dr. Sudler from material furnished by Dr. Mark Francis of the Texas Agricultural Experiment Station).

Fig. 1 The adult screw-worm fly (Compsomyia macellaria—Fab.), magnified 3.5 diameters. The line A B is the actual length of the fly.

Fig. 2. Larva of the screw-worm fly (Compsomyia macellaria—Fab.), magnified 3.5 diameters. The line A B is the actual length of the maggot.

Fig. 3. Egg of the screw-worm fly (Compsomyia macellaria—Fab.), magnified 30 diameters. The line A B is the actual length of the egg.

No.	Age	Sex	Nationality	Location	Blood picture	Result
1	9	M	Mexican	Nose	Not taken	Good
2	32	M	American	Buttock	Not taken	Good
3	10?	F	Mexican	Nose	Neg. Wass.	Good
4	25	M	Mexican	Nose	Pos. Wass.	Good
5	62	F	American	Ext. Nose	Not taken	Good
6	?	M	Mexican	Nose	Pos. Wass.	Good
7	4	M	American	Arm	Not taken	Good
8	?	F	Mexican	Nose	Not taken	Good
9	58	M	Mexican	Nose	Neg. Wass.	Good
10	12	M	Mexican	Nose	Not taken	Good
11	14	M	Mexican	Nose	Not taken	Good
12	46	F	Mexican	Nose	Pos. Wass.	Good (1)
13	7	F	American	Below ear	Not taken	Good
14	48	M	Mexican	Nose	Neg. Wass.	Good (2)
15	22	M	Mexican	Nose	Not taken	Good
16	54	M	Mexican	Nose	Neg. Wass.	Death (3)

Seven cases had blood Wassermanns taken; four were negative, showing that not all cases are of syphilitic taint.

I was not allowed to repeat spinal tap. He was unconscious and very restless. Could not be held in bed. He died Sept. 9th. Autopsy was refused.

In 1905, Yount and Sudler collected 23 cases with four deaths. Ward collected 55 to 60 cases, 31 with definite records, and 22 fatalities. Other writers give 15 cases with 9 fatalities, and 31 cases with 21 fatalities. Most of the series with great mortality were from Mexico. Ward's first case, the first reported in Nebraska, was fatal. He claims that neglected cases nearly always die.

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DISCUSSION

DR. C. E. YOUNT, Prescott, Ariz. (opening): Dr. Stroud's paper is timely and instructive; timely because it has been twenty-one years since this subject has claimed our attention, and after twenty-one years we are entitled to work it over thoroughly. Dr. Stroud brings out some new facts which should be published, especially in relation to the meningitis feature. The paper is apropos, because, since our publication in 1907, many new physicians have moved into this section of the country. Certainly if one depends on text-book description of symptoms and treatment, he will almost certainly lose his first case, as did the man in Nebraska. Dr. Stroud very properly stresses three points: first, the early diagnosis upon which the treatment hinges; second, proper treatment, which is standardized in Arizona; third, the preventive measures suggested by him. Making a diagnosis is often a dirty job; the stench is revolting to nausea, but one should make a close observation, and the best way with the nasal cases is with the reflected light. A little chloroform will act as a "lachrymator" and put the worm *on the run* and you will be able to recognize him, and remove him with forceps.

In collecting data for our work, we collected twenty-three cases with four fatalities, two of them due directly to ravages of the worms. We published our results in the Journal of the A. M. A., in 1907.

In closing, I would like again to go over the life cycle of this fly, and try to get into the records, once more, the facts, as there has evidently been some discrepancy between the scientific facts and the lore of the range. We get much of our information in the southwest from the range.

"The fly is a small species less than half an inch (1 cm.) in length and of a bluish-green color with metallic reflections. It is particularly distinguished from related forms by the presence of three longitudinal black stripes on the thorax. The head is reddish or yellow and the body is covered with stiff black hairs. The fly appears in early summer, the exact time depending on the latitude, after having passed the winter as an adult, either in a latitude free from extreme cold or in a protected location. In depositing its eggs it selects some decaying matter or wound and lays a mass of eggs at once; at least three or four hundred may be deposited by a single female in a space of a very few moments and the same fly may lay, at different times and in different places, hundreds and even thousands of eggs," (Osborn, Bull. 5, New Series, U. S. Department of Agriculture, Div. of Entomology).

"The eggs hatch within a few hours. If the eggs are laid in a moist place and on a warm day, they require less than one hour to hatch, according to Francis, or about nine hours according to Wood. The idea that they may be deposited in a living condition is refuted by all careful observations. . . . . .

"To recapitulate: This small fly is capable of laying hundreds of eggs. These eggs, in proper environment, hatch out into the screw-worm in less than twenty-four hours. This worm, or maggot, reaches maturity in about a week, during which time its ravages in animal tissue have been most persistent and destructive. At the end of this period, if unmolested, it instinctively wriggles away from the host to bury itself in the ground during transformation, this puparial stage occupying from nine to fourteen days, at the end of which time the mature fly emerges." (Yount & Sudler, Jour. A. M. A., Dec. 7, 1907, p. 1912).

This fly does not give birth to living larvae. However, there are, as have been mentioned, several other varieties which do deposit the living worm, so that there is a confusion. The chloroform treatment we have gotten from the cow puncher; it is the universal remedy of the cattle range and we have only added a few refinements.

May we call attention to the drawings in our original article, (see figure); they are quite accurate, having been made after careful measurements of specimens of the fly and larvae by Dr. Sudler.

DR. HILARY D. KETCHERSIDE, Yuma, Ariz.: During the late war, we had many of these cases in men at the front, and we noticed one peculiar thing: that was that we never had an instance of gas gangrene in a patient who was infected with worms, though there were many cases of gangrene in other men.

DR. JOHN J. McLOONE, Phoenix, Ariz.: It is very easy to realize how a screw-worm invasion can produce extensive destruction in the nose and sinuses. It is surprising that more of these cases do not prove fatal. The ethmoid region can practically be destroyed and the meninges can become involved through perforation of the cribriform plate.

Just a word more about treatment. I have used chloroform and a permanganate douche, followed by extraction with forceps. Although I have never tried it, it has occurred to me that the suction apparatus with the new suction nasal tip would be very effective in these cases.

DR. R. J. STROUD, Tempe (closing): The odor has been commented on; it is very characteristic, and if you have smelt a dead cow infested with maggots, that is the odor. Dr. Yount spoke of our information coming from the range. In the first case I had, if I had not had some range information, I would have known nothing about what to do. The patient came to the office and, in looking up his nose, I noticed the screw-worms moving around. Some of the boys at the mine also worked at ranches and they had been coming in and asking me for chloroform, which they told me they used to kill screw-worms. Remembering this, I put this boy under chloroform

anesthesia and took out the worms, and also squirted chloroform in the nose. If the cowboys had not told me, I would not have known anything about it, as there was no information in the literature. The dearth of literature in standard textbooks is startling.

There is a disputed point as to whether these particular flies deposit eggs or worms. My information from Nelson, and in the literature, would lead me to believe that larvae are deposited. Dr. Yount has gone into the matter very scientifically, as he and Dr. Sudler did in 1907, and has quoted from their original article, about the life cycle of the fly, and he is convinced that eggs are deposited. In the case of the woman with the carcinoma of the cheek and nose, I was there within half an hour of the time she was supposed to have been blown by this fly. The fly had been there only a matter of minutes, and I found this area infested with worms, which, the man of the house told me, had shown noticeable increase in size since he first saw them.

BLOOD TRANSFUSION

FRANK J. MILLOY, M. D.
Phoenix, Arizona

(Read before the Thirty-sixth Annual Meeting of the Arizona State Medical Association, at Yuma, Arizona, April 21 to 23, 1927).

The purpose of this paper is to describe a method for blood transfusion which was devised by one of my associates, which has been used by us for the past three years, and which, as far as we know, is original with us. The apparatus used consists of five 100 c. c. Leur's syringes; a 50 c. c. ampule of Parke-Davis 2.5 per cent sodium citrate, and the regular blood transfusion needles. The technic is as follows: 10 c. c. of sodium citrate is drawn into each 100 c. c. syringe, the donor is placed on the table, arm sterilized, tourniquet applied just tight enough to constrict venus circulation, but not to interfere with arterial circulation. As a rule the donor has fairly large veins, so the large-sized needles are used in drawing the blood. Then, as the operator fills each syringe, he passes it to his assistant who shakes the syringe thoroughly to mix the citrate and blood. This procedure seldom requires longer than five minutes. The recipient's arm is then prepared, tourniquet applied, and a needle inserted in a vein. The recipient's veins generally are not as large and prominent as the donor's, so that, sometimes, it is necessary to use a smaller gauge needle. The only difference is that if a smaller needle is necessary, it takes a little longer to force the blood through it. As soon as the needle is placed in the vein, one syringe after another is attached to it. First a small amount of blood is withdrawn, so that the air in the needle is brought back into the syringe, then the blood is forced into the vein as quickly as the needle will allow it to flow. If the regular sized transfusion needle is used, the five syringes can be discharged into the vein in from three to five minutes, so that the entire procedure, allowing for the change from the donor to the recipient, may not require more than fifteen minutes. And the operator requires the help of only one assistant, who needs no training but just a few instructions.

The advantages of this method are: (1) the rapidity with which a transfusion may be performed; (2) the minimum length of time the blood is outside the human body; (3) the minimum destruction of red blood cells, by preventing the blood from coming in contact with the air, and the elimination of the stirring rods to mix it with the citrate; (4) the marked immediate effect upon the patient of forcing the 500 c. c. of blood into the circulation so rapidly as compared with the older gravity method, in which the blood runs so slowly; (5) the remarkably few reactions following the transfusion; (6) if the donor should suddenly go bad his own blood may be quickly injected back into his veins.

During the past three years we have performed sixty transfusions in twenty-five patients. Seven of these cases were patients with pernicious anemia, and the remainder were pre-operative and post-operative cases or secondary anemia patients suffering from extensive hemorrhage or sepsis. One case with pernicious anemia received eleven transfusions and had only one slight reaction, after the ninth. Two other pernicious anemia cases, who had eight and ten transfusions respectively, had moderate reactions after the last two or three transfusions. The remaining twenty-two patients had no reactions whatever except marked improvement. One other pernicious anemia patient who had had ten transfusions by other methods, both direct and indirect, and who, after the last four or five, had terrific reactions lasting from twenty-four to seventy-two hours, consisting of severe chills, fever, urticaria, and asthma, was given four transfusions by this method with absolutely not a sign of a reaction.

We have not been performing so many transfusions during the past year on account of the brilliant results obtained in pernicious anemia patients with the Murphy-Minot diet. Our most gratifying results with transfusions have been obtained in pre-operative and post-operative cases. The procedure can be carried out so quickly that if a patient's condition is not good, or if much shock is present, a donor can be kept on hand and a transfusion given immediately following the operation.

Many cases present very poor risks for

surgery and transfusions could practically restore them to normal risks, or give the patient whose condition was apparently hopeless, a fighting chance with the aid of surgery.

Transfusion has a very decided effect upon sepsis or toxemia. Our most recent example was a case of exophthalmic goiter who had postponed operation repeatedly, because she made several temporary recoveries with iodine. Finally this failed to help her and she became desperate. She was in complete collapse for 48 hours with heart rate of over 200 and respirations of 48, which were Cheyne-Stokes at times. Two hundred cubic centimeters of blood one day and 400 cubic centimeters the next day restored her so that she is well on the way to preparation for operation.

There are many cases of chronic invalidism where blood transfusion would give just enough of a boost so that they would be quickly restored to their place alongside of their fellowmen. Or cases of secondary anemia resulting from some prolonged sickness may each gain more from one transfusion than from several months of iron therapy and ordinary restorative procedures.

Blood transfusion is directly indicated in all cases of hemorrhage even of the mucous membranes. At first thought it would seem a contraindication here because it raises the blood pressure, but fresh blood is the best hemostatic. Citrate blood shortens the coagulation time temporarily, and unmodified blood permanently.

Reviewing the literature on blood transfusion at the present time, we find that the majority of evidence is in favor of unmodified blood as compared to the citrate method, mainly because it is followed by fewer reactions. It is equally agreed, however, that the cause of the reactions with the citrate method is not because sodium citrate is a toxic substance. In fact it has been demonstrated numerous times that this drug is practically non-toxic. The chilling of the blood during the transfer from donor to recipient is more frequently the cause of reactions than any other factor, according to Lewisohn. Citrate does destroy many of the platelets, according to some investigators. So, if we wish to transfuse patients with hemophilia or purpura hemorrhagica, the whole blood should be used, as the platelets are most essential in reducing the coagulation time. We have not had occasion to transfuse such a case.

Better results could be obtained in transfusion work if more careful attention were paid to the technic of grouping. In all our cases we have not only grouped all our recipients and donors, but we have typed them against each other. On more than one occasion we have found individuals in the same group, whose blood was incompatible when tested against each other. The use of group 4 as a universal donor, probably should be condemned. This would probably eliminate many more of the reactions reported in the literature as following the citrate method.

If blood transfusion can be easily and quickly done, it has a very much larger field than it is used for at the present. There are many forms of apparatus recommended for use for the direct method. It is quite evident, then, that the ideal apparatus has not been invented and all the present ones in use have disadvantages and often are accompanied by failures. We have never yet failed to complete a transfusion. Any one who can give any form of intravenous therapy, should be able to give a transfusion by the method we have described. And we have never found it necessary to cut down upon a vein.

CONCLUSION

While we agree that the unmodified blood no doubt has a distinct advantage over the citrate method, nevertheless we have had almost equally good results with the technic we have described, mainly because we have eliminated two of the greatest factors in the production of post-transfusion reactions by preventing the chilling of the blood during the transfer, and by the more careful attention to direct typing of donor against recipient. The most frequent indications for transfusion are in pre-operative and post-operative patients and cases of secondary anemia due to hemorrhage or sepsis, or both, who require only one or two transfusions, and, therefore, are benefited just as much by one form of blood as another.

We have performed sixty transfusions in twenty-five patients with slight reactions in only three cases of pernicious anemia and only after they had eight transfusions or more. One case of pernicious anemia who had had ten transfusions by other methods, both direct and indirect, followed by very severe reactions in the last four or five times, we transfused four times, and we had a marked improvement following each occasion, without the slightest sign of a reaction. Transfusion should be used more frequently as an early therapeutic measure and not be resorted to as a last desperate chance to save the patient's life.

DISCUSSION

DR. A. C. CARLSON, Jerome, Ariz. (opening): The citrate method described seems to be a combination of the Lindemann and Lewisohn methods; in other words, a multiple syringe plus sodium citrate. Regardless of the method, whether modified or unmodified is used, the important thing in any transfusion is matching blood, having the donor and recipient in the same group and cross-typing the blood. As for this particular modified method, Dr. Milloy points out that one of the advantages is to prevent chilling of the blood. You will certainly have less chilling in the unmodified method, and it seems to me that, in any institution with a well trained team available, there should be no trouble with the Lindemann, Unger or other methods. We first started out with the Lindemann method of multiple syringes and did have trouble, but found that it was due to having too few syringes. Later we established a procedure with the Unger method and a well trained team and have had no trouble.

As to the advantages claimed for this citrate method: (1) Rapidity of preparation. This is true in certain cases where you are anticipating the possibility of transfusion, but where it is done as an emergency and you still have to go through the typing and grouping of recipient and donor, and preparing recipient and donor, you could have your apparatus prepared and use the unmodified method as readily. (2) Minimum length of time. We must agree that the citrate method is quicker than the unmodified method. (3) Minimum destruction of blood cells by preventing contact with air. Dr. Milloy mentioned that, after withdrawing 100 c.c. of blood from the donor, the syringe is handed to an assistant who mixes by shaking. I wish to ask whether it is possible to mix the blood and citrate by shaking without having air in the syringe? The only mixing without having air in the syringe would be by osmosis or gravity. It seems there must be air in order to secure mixing. (4) Marked immediate effect upon the recipient by forcing so much blood rapidly into the vein, as compared with unmodified method. This may be all right in certain acute cases where forcing blood into the recipient will do no harm, but there are cases in which it may do harm. He states that they give 500 c.c. of blood in from 3 to 5 minutes. This surely seems rapid; placing that amount of blood in the recipient's circulation in from 3 to 5 minutes is apt to cause pressure on the right heart and collapse. (5) Possibility of donor going bad. That is a possibility, but we try to select young robust adults and if we see any signs of paleness or dyspnea, other methods of stimulation could be resorted to and the withdrawal of blood stopped.

Another point mentioned was that patients came with reports of reactions from previous transfusions, but did not mention the technic of transfusion used when such reaction occurred. Granted that the unmodified method was used, is it not possible that care was not taken in the proper matching of blood? When the blood is properly matched, the likelihood of reaction is reduced to a minimum, regardless of the procedure.

DR. J. I. BUTLER, Tucson, Ariz.: It is not so much a question of technic as it is how you handle the particular method you use, team work, etc. The point that Dr. Milloy mentioned but did not emphasize, is that transfusion should be used far more frequently than it is. It is a method of every-day practice and not to be used as a last resort.

DR. R. D. KENNEDY, Globe, Ariz.: Last year I visited one of the eastern clinics where many transfusions are done. In speaking of reactions, they told me that, up to a certain period, they had quite a number, but that during the past year they had adopted the practice of re-grouping all donors on the day of the transfusion, and found that the group of many donors would change. Since adopting the checking of the group of donors, they have had no more reactions.

DR. FRANK J. MILLOY (closing): I wish to thank the doctors, especially Dr. Carlson, for their discussion. It probably makes no difference which method is used; like everything else, the method you are most familiar with is the one with which you will succeed the best. The point we wish to make, however, is the simplicity and ease with which a blood transfusion can be given by the method I have just described. Everyone has seen blood-transfusion result in failure with both the old gravity method and the more recent direct method of transfusion, even in the greater clinics. So far, this procedure has never resulted in failure with us.

I cannot answer the question about the necessity for air in the syringe in order to secure thorough mixing; we get very little air, if any, in the syringe while it is filling, and we have never had coagulation occur as a result of insufficient mixing. We have never had a donor get bad enough to necessitate the reintroduction of his own blood, but have always felt that, if it should occur, we would be ready with the best possible means of resuscitation.

GRANULOMA FUNGOIDES

A. A. SHELLEY, M. D.
Phoenix, Arizona

Read before the Thirty-sixth Annual Meeting of the Arizona State Medical Association, held at Yuma, April 21 to 23, 1927.

Some of the synonyms are: mycosis fungoides, granuloma sarcomatodes, fibroma fungoides, sarcomatosis generalis.

Stelwagon says it is a chronic, malignant disease characterized by precursory symptoms of months' or years' duration, of an eczematous, urticarial or erysipelatous aspect, with the subsequent appearance of pinkish or reddish tubercular or nedular, lobulated tumors or flat infiltrations, which frequently ulcerate and form fungoidal or mushroom-like growths. The malady was first described by Alibert in 1814. Duhring reported the first case in America.

SYMPTOMS

Sutton says that, in the majority of instances, the course of the disease is marked by four fairly well defined stages: (1) the stage of dermatitis; (2) infiltration; (3) tumor formation; and (4) ulceration.

In the first stage the manifestations may assume the most variable forms. As Besnier has said, "In the presence of a chronic, ambiguous, pruritic dermatitis, rebellious to the ordinary treatment and which assumes the form of a vague erythrodermia, of a psoriasis, or an eczema, of a rebellious urticaria, of a lichenoid prurigo, etc., it is necessary to bear in mind the question of a possible mycosis fungoides." As a rule, however, the predominating type of eruption is erythematous or eczematoid in character. This preliminary stage may be brief, or even entirely lacking, the growths developing on apparently normal skin, but

usually it is present and may last for months or years before signs of infiltration become apparent. The lesions of the first stage are usually circinate in outline, and may be either dry or moist. In color they vary from a pinkish or reddish to a purplish or brownish hue. Itching may be absent, but is usually present. These earlier manifestations are as capricious in their course as they are variable in aspect. The eruption may disappear spontaneously at any time, only to recur at the same site or in some other locality in the course of a few days or weeks.

In the second stage, circumscribed areas of infiltration appear. The lesions vary in size from that of a pea to that of the palm, and may be commingled with the erythematous and eczematoid plaques of the first stage. These, too, are oval or circinate in outline, but, as a result of involution and of coalescence, crescentric and gyrate lesions may be formed. Ulceration sometimes occurs at this stage.

The period of tumor formation gradually follows that of infiltration. The growths are round or oval, pea to orange size or larger, whitish, pinkish, or purplish, solid, smooth or crusted tumors. In number they vary from a few to twenty or more. No region is exempt. The course of the tumors varies. They may disappear spontaneously, and new ones spring up on diseased or apparently normal areas at any time.

Sutton says the lesions are usually tender and painful, and itching is not a prominent feature of this stage. Ulceration generally begins at the apices of the larger growths, and usually only a portion of the tumor is destroyed. The resulting lesion is a mushroom-like ulcerating mass, the raw surface of which is covered with a sanguineous, purulent exudate. Lymph node involvement may be present, but is not a typical or characteristic feature of the malady.

ETIOLOGY

The majority of the reported cases have occurred in adult males. Trauma has apparently been a factor in one instance. Sutton says that the disorder is probably microbic in origin, although careful and exhaustive investigation by competent observers has thus far failed to unearth the causative organism. Strobel and Hazen conclude that mycosis fungoides belongs to a group of myeloid and lymphoid conditions, which are closely interrelated, and that these diseases probably have a common exciting cause, possibly a micro-organism, and in this way may be related to the infectious granulomata. It occurs only in adults from about 30 years (at least there is no reported case under 20) to old age.

No two cases have ever occurred in the same family, and nurses and attendants have never become affected. Inoculation of guinea pigs and rabbits, by Stelwagon and others, was without result. There is no characteristic blood picture, though there is often moderate secondary anemia, varying leukocytosis, and increase in mononuclears.

PATHOLOGY

Stelwagon says there seems no longer doubt that granuloma fungoides can scarcely be considered as belonging or allied to true sarcomata, as Kaposi, Funk and others believe; although there are, as Bowen points out, many points of similarity, both histologically and clinically, with multiple sarcomatosis, of the pure type. The fact that some of the growths may undergo involution is, according to the dictum of Cohnheim, a proof of their non-sarcomatous nature, but we know now that in some instances of sarcoma, especially the multiple pigmented sarcoma of Kaposi, such retrogressive changes can also take place. In the early stages, Galloway and Macleod found connective-tissue cell proliferation around the blood vessels of the papillary layer, the hair follicles, sebaceous glands, coil ducts and occasionally around the coil glands. The cells presented distinct types: large, oval, fusiform or rounded connective-tissue cells containing granular protoplasm, a large nucleus whose chromatin network and nuclear membranes were darkly stained, while the nucleoplasm was more densely stained than the cellular protoplasm, unless the cells were undergoing mitosis, when the figures appeared deeply colored. Then there were small round cells of slightly variable shape, somewhat larger than leukocytes, with nuclei similar to, though proportionately smaller than those of the large cells; mast cells of varying size; a few plasma cells; and an occasional giant cell. In the tumor and breaking-down stage the cell proliferation was increased and the cells showed a marked tendency to break down. The granuloma encroaching on the down-growing epithelium, flattened it out and eventually spread up to the surface and was covered only by a thin layer of corneum. There doesn't seem to be anything specifically diagnostic in the histological pathology.

DIAGNOSIS

In the early stage it is to be distinguished from the commoner diseases which it mim-

ics, such as eczema, psoriasis, etc., but I believe diagnosis is impossible before the stage of tumor formation. The erratic course of the lesions, and their resistance to ordinary treatment should serve to arouse suspicion.

PROGNOSIS

Stelwagon says: "The disease goes on to fatal termination, the duration, as already stated, varying somewhat widely from some months to fifteen years; after the active tumor stage is entered, the patient can scarcely live more than some months, or one or two years at the most, depending principally upon the numbers of the growths and the degree of ulcerative tendency displayed." Sutton says: "In a few instances recovery has ensued, but the majority of the cases terminate fatally in from one to ten years."

CASE REPORT

Miss S., aged 39, school teacher; resident of Arizona since 1908; graduate of Tempe Normal: blonde; has always had good health until present illness. Skin is clear, she is well nourished, has good physique, and is always full of life and energy.

Family History: Her father died, when she was about eight years of age, as the result of accidental injury. Her mother is living, but is in poor health. When the mother was about 14 or 15 years of age she had enlargement of the thyroid gland (goitre). She was treated by a doctor in Illinois and the enlargement disappeared. About 15 years later she developed myxodema, and before a diagnosis was made she was a mental and physical wreck. Although she has taken thyroid extract constantly, she is still a semi-invalid. There is one brother who is in fair physical condition, aged 33.

In the summer of 1922 the patient developed what seemed to be a few small areas of eczema on the arms, on which ordinary treatment had no effect. By autumn of the same year there were some scattered spots on the thighs: all lesions were confined to the flexor surfaces. The lesions had very little color, but were rough, rather dry and inclined to scales. In the spring of 1923 she had a moderately severe case of influenza. The skin eruptions spread some, but not below the elbows or knees and still on flexor surfaces. During the summer of 1924 she attended a teachers' summer school at Flagstaff for some weeks, and when she returned the eruption had practically disappeared. In February, 1925, she noticed there was no wax in the ears, but instead a cheesy substance. In March of the same year she had a second attack of influenza; following this, the eruption spread over all the body except the legs. There was some enlargement of the axillary and inguinal glands. The eruption appeared more inflammatory, and the skin became infiltrated at site of eruption. A month or two prior to this, a blood Wassermann reaction was negative, and the urine tested normal. Tonsils were checked and found normal. Teeth all O. K. Heart, lungs and digestive organs negative. General condition good, and patient teaching. Blood examination revealed nothing except a slightly diminished number of red cells.

About this time I referred the case to Doctor Clohessy. He said, at the time, he thought it was eczema of the erythematous type. He treated her with various applications and constitutional medication until he went away on vacation in May or June. The treatment had no effect except that it gave some comfort in the way of relieving the itching, which was a prominent symptom from the beginning.

The eruption kept spreading. In the early spring of 1925, her ears became red and swollen to the extent that the ear canal was almost closed and the entire external ear involved. With it there was a high temperature. On the entire surface of the ear there was a profuse exudate of a yellowish watery fluid which yielded a pure culture of staphylococci. This condition lasted only 10 or 12 hours, but the same condition recurred every few weeks. By this time the eruption had spread all over the body, including the scalp, palms and soles. There was not a quarter inch square of healthy skin on her body. The hair became gray, lost all semblance of life and fell out. Scalp was one mass of scales, and the entire body desquamated profusely. She said there would be a half-cup or more of scales on the sheet every morning. By July, the character of the eruption had changed very much. There were lesions ranging from the size of a grain of wheat to an inch or more in diameter. Some would be designated as papules and others as tubercles or nodules. Possibly the most of them were the size of a coffee-bean, and the shape was round or oval. These nodules were solid masses, pink in color, not painful at any time and when pressure was made upon them they exuded a sero-pustular fluid of a pearly color, which, on culture, yielded staphylococci. The larger of these would become ulcerated on the surface and the edges of the ulcer were an infiltrated ring simulating the appearance of a chancre. This is the mushroom-like growth of which writers speak. The surface of the ulcers was depressed, granular in appearance, with a yellowish color and rather dry. That is, there was very little exudate. There were only a few of these ulcers, and none of the smaller lesions went to ulceration. One or two ulcers healed with a scar in the course of two or three months. About November, 1925, she began having styes every now and then, and also abscesses. The abscesses came one at a time at intervals of weeks. They appeared on the dorsum of the foot, on the thigh and back of the neck, in the axilla and on the breasts, and, when opened and drained of about 2 to 4 drachms of pus, they healed readily. Her feet and legs were edematous, and she was losing weight rapidly.

With all these lesions she was teaching school and kept going until the end of the school term, 1926.

When Dr. Clohessy returned, in the fall of 1925, I gave him a brief description of the changes that had taken place in his absence, and, without seeing the patient, he at once made the diagnosis of mycosis fungoides. He also gave me the cheerful information that the disease is always fatal. We then began giving the prescribed treatment of arsenic. We also gave a wide variety of treatment, as colloidal gold, autogenous vaccine, endocrines, quartz lamp, and other light therapy, and all to no effect.

At the end of the school term, in 1926, the patient was very sick. She spent most of her time in bed; her pep and vitality were at a low ebb. In the meantime, I learned that Hertzler had had 11 cases, all of which terminated in death, except one, which was apparently cured by x-ray. He explained, however, that the lesion in this case was confined to an area on the back, the size of

two hands. A little later I learned that Dr. Denney of the Kansas University School of Medicine, was then treating a case of granuloma fungoids, of a very extensive lesion, with x-ray, and that the result, up to that time, was very encouraging. With this meagre information, I asked Dr. Watkins to give our patient x-ray treatment. On this treatment she began to improve at once. By the time her school started last fall she was able to teach, and, in fact, seemed to have regained much of her former vigor.

After x-ray treatment was started, the hair all came out and the lesions healed with a white, smooth scar, except that the ulcerated lesions healed with a depressed scar. At the present time she has only a few lesions that are not entirely healed, and they are improving.

The patient seems as healthy as ever. Her hair has returned in a heavy growth of iron gray, that looks perfectly healthy. One item that may have some bearing on the prognosis of this case is the fact that one of the ulcerative lesions that had been healed for some months began to break down again. However, a treatment by x-ray promptly healed it. The question is, will the x-ray cure be permanent? In my mind I am convinced that she would not have lived long without x-ray interference.

I wish to add that I am much indebted to Dr. Clohessy for the diagnosis.

I also wish to express my appreciation to Dr. Watkins for the treatment. To me it seems a wonderful piece of work; for in this case he had to "blaze the way"—there being no prescribed technic to follow. When you learn that he covered the entire body about three times, without a burn and apparently without any injury to the blood, you will agree with me that he has at least established a precedent.

DISCUSSION

DR. W. WARNER WATKINS, Phoenix, Ariz., (opening): We had seen this patient several times before the final diagnosis was made and x-ray treatment begun. When it appeared to be an eczema, we did not advise x-ray treatment and suggested ultraviolet radiation instead. This was given by another Phoenix physician, but without material effect. The extent of her involvement may be judged by the fact that, when we were asked to make food sensitization tests, we were unable to find a single square inch of skin anywhere on her body which was normal enough to place a test on.

When the final diagnosis was made by Dr. Clohessy, and we not very hopefully agreed to administer x-ray treatment, she was in a pitiable shape. Our treatment consisted in marking off the entire skin surface, from crown of head to tips of the toes and covering two or three areas at each treatment, the treatments being given once a week, as this was a convenient interval for the patient. It required forty-five areas to cover the body surface. The amount of radiation was about seventy per cent of a minimal skin dose, just enough to produce a reaction in the deeper skin layers. The factors used were 75 k. v., 5 ma., 12 inch dist., 10 minutes, with ½ mm. aluminum filter. Recession would invariably begin within a few days and superficial lesions would have disappeared within two weeks, the nodular areas and ulcers requiring longer to heal. Many of these more advanced lesions would require additional radiation before healing would take place. The entire surface of the body was covered systematically three times. The dose over the head was an epilation dose, the hair falling out about three weeks after treatment.

Since complete recession of all lesions took place, there has been evidence of recurrence several times. When this happens, the individual lesions which appear have promptly disappeared again under treatment.

According to the best information obtainable on this condition, the improvement in this patient, which amounts to an apparent cure, will not be permanent. The disease responds, as do the lymphomas, leukemia or Hodgkin's disease, by a very astonishing improvement. After a period of time, varying with the individual, there are recurrences which may yield to radiation, but will do so with increasing reluctance until, finally, a stage is reached when radiation has no further effect.

However, for the time being this patient has been pulled back from the grave and, whatever the final outcome may be, all parties interested are well pleased with the present status.

DR. T. T. CLOHESSY, Phoenix, Ariz.: Just a few remarks regarding the pathology and treatment of granuloma fungoides. This disease manifests itself essentially as an increased genesis of lymphoid cells and their deposition in pathological quantities, more especially in the skin. In some cases necropsy has shown such collections in some of the internal organs. These collections of lymphoid cells are found in varying quantities in the different stages of the disease; in the erythematous and eczematoid stages, merely as scattered infiltrations; the fungoidal stage, as small or large circumscribed accumulations. Except for the subjective sensation of itching, the general health is apparently not impaired until the consecutive ulcerative stage arises. There is little or no provision made for a vascular supply to these fungoid masses which, by their pressure and otherwise, interfere with the nutrition of the overlying skin, and there result necrosis, pyogenic infection and ulceration, with consequent general sepsis and death. What causes this abnormal development and these localized collections of round cells, we do not know.

As to the action of the x-ray on these lesions, we know that raying the bones will produce a temporary leukopenia. We know that raying the tonsils will produce a temporary destruction or dispersal of the lymphoid cells therein contained. So with the action of the x-ray in this condition. It is a wonderful help and the only help at this stage; its effect is truly spectacular, but experience since 1912 goes to show that, unfortunately, the result is but temporary. The lymphoid cell collections temporarily disappear, but the x-ray does not remove the cause of their development and I fear there will be a return of the lesions in this case, as has been the case with those reported to date.

DR. ORVILLE H. BROWN, Phoenix, Ariz.: Dr. Watkins' reference to the suspicion of food sensitization in this case reminded me of two cases I had some years ago. I did not see this patient and do not know whether there is any similarity, except the itching and thickness of the skin. In both my cases almost the entire body was covered, with almost intolerable itching. In one case there was almost normal skin in one groin and a number of sensitization tests were made in that area; two or three foods were found to which he did not react and by putting him on these foods and nothing else, in a week or two he was well. In the other case there was no normal skin to put the test on and I selected a diet of foods that

he had not been eating, hoping to get something to which he was not sensitive, and sent him away; after a month or six weeks, he was better, with some normal skin, so I made a number of food tests, and by putting him on foods to which he did not react, it was only a matter of a short time until he was cured. I do not know that these experiences have any bearing on this case of Dr. Shelley's; one of these was a baker and his primary sensitization was wheat; the other was a woman living in the hills and she was very fond of peaches and ate a great many of them, and that was her primary sensitization.

DR. J. I. BUTLER, Tucson, Ariz.: Has there been a white blood count recently? (Answer: Not recently.) The description is so similar to the extensive skin lesions of lymphatic leukemia that I wondered about it.

DR. SHELLEY (closing): She has been on diet but has never had tests made for food allergy. Dr. Watkins has said she has had one or two evidences of recurrence. The last time I saw her, the day before I came away, she had another typical lesion on the back of the shoulder. The description of the disease, which can be found in the literature, is quite typical. The treatment has been considered hopeless up until a short time ago. The literature does not give us anything on treatment of a curative nature, until the x-ray was instituted.

FOREIGN BODIES IN AIR AND FOOD PASSAGES.

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(Read before the Maricopa County Medical Society, April 4, 1927).

A few months ago a doctor sent me a patient who said he had a pledget of cotton lodged in the right side of his larynx. He knew it was there because he could feel it. The truth was the doctor had been treating this patient with cotton wound on an applicator. While he was applying some medicine to the nose with this applicator, the cotton came loose and was lodged beneath the inferior turbinate, on the left, when the patient declared it was lodged on the right side of the larynx.

About three years ago a Mexican girl, six years old, was sent to me with a serosanguinous discharge from her nose. The child had some fever, was apathetic, lost sleep and appetite, and showed that she was very sick. This patient had been treated by one doctor for "flu," and by another for gastro-intestinal disturbance because she vomited and had tympanitis. I found, and removed from her nose, 123 screw worms.

About twelve years ago I had a white boy, aged six, with fever, tympanitis, and delirium, with complete unconsciousness. It looked very much like meningitis. I removed from this boy's nose 293 screw worms.

A colored woman came in and said, "I have a pin in my throat." She had no pain except at one point, to the right and above the "Adam's apple." I found the pin just above the larynx with the point to the right and the head to the left. Removed it without difficulty.

FOREIGN BODIES IN THE LARYNX

Many times the foreign body passes through the larynx without causing any irritation, therefore there are no laryngeal symptoms. In this case it may be arrested at the lower air passages and cause instant death.

The cough is severe at first, subsides for a short time but may persist and become croupy. At other times the patient may have paroxysms of coughing that resemble whooping-cough. Therefore, such a patient may be treated for diphtheria or whooping-cough.

When a child gets something in its throat a parent or some neighbor at once puts a finger down the child's throat to remove it. Often they move it instead of removing it and then it passes into the larynx, trachea or esophagus. Others catch the child by the heels with the head down and shake the child or pound it on the back. In this case, if the foreign body is in the trachea and it passes out and lodges in the chink of the glottis, the child will suffocate.

Recurrences of laryngeal paroxysms suggest the lodgement of a movable body in the larynx.

Subjective sensations of foreign bodies in the larynx during the first two or three days: There may be sharp pains in the Adam's apple or in one or both ears. If the arytenoids are inflamed, there will be pain on swallowing. Phonation will likely be seriously impaired; the sputum, blood streaked. Dyspnea varies with the size of the intruder and the amount of inflammation it causes. Tooth-brush bristles, fish-bones, etc., may pass beneath the mucous membrane and cause a perichondritis and a destruction of the larynx.

Hoarseness in angioneurotic edema involving the larynx, may simulate a foreign body in the larynx.

FOREIGN BODIES IN THE TRACHEA AND BRONCHI.

Usually we have the history of laryngeal spasm which subsides but leaves the patient with a wheezing respiration and a cough. The cough is a most distressing symptom, coming in paroxysms which may be so severe as to produce vomiting. Cyanosis and dyspnea often accompany the cough, and one may hear a flapping sound in the trachea.

If the foreign body be not removed, increasing dyspnea occurs, produced by the

swelling of the subglottic tissues and tracheo-bronchial mucosa from the trauma. Sudden asphyxia is always a danger, for a powerful bechic action may jam the foreign body into the glottis chink.

This paroxysmal cough may cease for a while then recur, as shown in the case of the child with the pin in the bronchus of middle right lobe and published by me in the Southwestern Medical Journal in February, 1927, or in the case of the child with the hollow bead in the right lung, published in the Chicago Eye, Ear, Nose and Throat Monthly, July, 1924.

Inspection—If the foreign body has been present for some time the affected side of the chest may be smaller than the other side. This is not always true, for in some cases the affected side is much larger on account of an emphysema developing below the foreign body. This is seen often after the inhalation of peanut kernels or a grain of corn.

Expansion is more or less limited in the side in which the foreign body is lodged.

Palpation. Where there exists but partial obstruction in a large bronchus, fremitus can be felt best posteriorly over the foreign body. In case of a "drowned lung," it will be felt on the unaffected side. Percussion early gives a more or less tympanitic note because of the valve-like obstruction which holds the air in the lung, but later, as secretions accumulate, the percussion increases in dullness until, over the area of the "drowned lung" it is flat.

Auscultation. By placing the ear or the stethoscope over the mouth of the patient, one will get an asthmatoid wheeze on forced expiration after the lungs have been cleared as much as possible of mucus. At a distance from the obstruction, respiratory murmur is diminished and, if there is complete obstruction, there will be an absence of breath sounds. Rales, loud, snoring, cracking and snapping sounds are often heard in a distant part of the affected lung or in the opposite lung. These sounds are most often heard in the case of a peanut in a bronchus, and were observed in the child with pin in right middle lobe. If the air can pass the obstruction the rales will be heard posteriorly and over the foreign body.

One may not have the above history or symptoms, or the patient may have inhaled the foreign body when a child and now have pus sputum, hemorrhages, cough, night sweats, emaciation, club fingers and all the other symptoms of tuberculosis. All such cases should have an x-ray of the chest, especially when no tubercle bacilli are found in the sputum. The literature gives accounts of many patients treated in sanatoria for months, who were afterwards found to have foreign bodies and abscesses in the lungs.

The differential diagnosis between tracheal and esophageal foreign bodies is, seemingly, at times a point of difficulty. Here a lateral x-ray will be of value as well as an anterioposterior. In a good lateral x-ray plate the trachea can be seen plainly. Furthermore, the disk-shaped foreign body seen to be lying in the sagittal plane must be in the trachea, for it must have entered through the anterioposterior chink of the glottis and can remain in this position only because the trachea is an open tube with a yielding posterior membranous wall.

On the other hand, a disk, to enter the esophagus, must pass flatwise behind the larynx and enter the anterioposteriorly collapsed cervical esophagus in the same position, therefore, it will be seen in the lateral plane of the body, and usually just behind or on a level with the suprasternal notch.

FOREIGN BODIES IN THE PHARYNX

Fish-bones are perhaps the most frequent and usually lodge in the crypts of the faucial or lingual tonsils.

In December, 1926, Dr. Felch sent me a lady who, while eating noodle and beef soup, lodged a piece of beef bone in her throat. I removed this bone from right sinus periformis.

In January, 1927, Dr. Goodrich sent me a lady who, while eating the same kind of a dish, had a bone lodged in her throat. I removed a piece of beef bone about one-half by three-fourths inch from right sinus periformis.

Mrs. M., while eating had something lodge in her throat that felt like a needle. The pain was so severe that a physician was called. He gave a hypodermic. Next morning I found a pin with head presenting and the point had pierced upper posterior border of larnyx. The head showed to right of epiglottis. I removed it.

Swelling increases the discomfort in these cases and the patient refrains from eating or drinking. Large foreign bodies, as a tooth plate, may lodge in the pharynx and cause suffocation, thus all cases of coma when first seen should be examined for foreign body in the pharynx. A foreign body may be coughed from the lower air passages and lodged in the naso-pharynx and overlooked for some time unless this possibility is considered. If the object be lodged near the larynx, violent coughing may result. If the object be a fish-bone it may take very close scrutiny to find it. Blind efforts at removing are not justifiable. The cornu of the hyoid bone has been denuded and partially removed.

FOREIGN BODIES IN THE ESOPHAGUS

Dysphagia is the most prominent symp-

tom of esophageal foreign bodies. Complete obstruction may be seen when a bolus of meat is lodged in the esophagus. I saw Dr. Robert Lynch remove one which completely obstructed the esophagus. In these cases patients have excessive salivation.

Dyspnea is a troublesome symptom when the foreign body is large and produces pressure on the larynx or if a pharyngeal foreign body overhangs the larynx. Cough is an important symptom in some cases and may be due to an overflow of secretions into the larynx, or when perforations, traumatism or ulceration of the wall, allows leakage of secretions or food into the trachea.

Hematemesis and hemoptysis are not uncommon and, if the foreign body penetrates a large blood vessel, a fatal hemorrhage may result.

Wry Neck. A patient was sent to Borzell for suspected disease of the shoulder joint.' He found a coin in the esophagus.

Fever is often present in children. Jackson reports fever of 106 degrees, and a very toxic condition, in a patient who had an open safety-pin in the esophagus. Always x-ray a doubtful case and then a negative finding does not always prove that no foreign body is present.

On March 12, 1927, I had a child one and one-half years old who came in from out of town with a lead slug in its esophagus. The child, while playing on the floor, got hold of a lead slug and put it into its mouth. The mother, seeing this, became excited, picked the child up and shook it, then ran her finger down its throat and, of course, instead of removing it, pushed the foreign body further down. The child had some paroxysms of coughing, was nauseated and breathed with difficulty for a while. It was given castor oil with no results.

I saw the child two days later. It had taken no food and very little water, was apathetic, listless, looked pale. Temperature was 100.6, there were bronchial rales on both sides, and the child seemed quite toxic. X-ray in this case showed a disk in the lateral plane of the body, therefore it must be in the esophagus. This was removed under general anesthetic at the hospital. The child left the hospital two days after, in very good condition except for a slightly roughened breathing.

USES OF THE ULTRAVIOLET RAYS IN CERTAIN EYE, EAR, NOSE AND THROAT DISEASES

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Read before the Maricopa County Medical Society, April 4, 1927.

Perhaps most of you are more familiar with the history and theory of ultraviolet rays than you are with the actual good they may do when used on the proper case and in the right way, so I will omit all that rehashing and, instead, will relate to you in a very brief manner, my own experience.

The operative technic and dosage are very important, varying with type of pathology, location of the pathology, type of patient, and, of course, type of lamp. For practical purposes I have found that the reactions to be effective must necessarily cover three stages; viz: a stimulative erythema or reaction—that which produces a faint flush of the surface a few hours after exposure; second, a regenerative erythema—that which is a more marked hyperemia without actual blistering; third, a destructive erythema, which, of course, is the most extreme reaction.

The first group of cases which I will describe are those of pathology of the lids:

Miss B., stenographer, had growth in the upper right eye-lid which was a chronic inflammation of a Meibomian gland. She very obstinately refused an operation although the tumor mass was gradually enlarging. It was not pustular, but was very firm and non-movable. The technic used was as follows: A quartz applicator 15 mm. in diameter was firmly pressed against the tumor through the skin for the period of 4 min. When the patient returned on the fifth day the skin was peeling and the tumor mass was slightly smaller. Three other similar treatments were given at six day intervals and the growth disappeared within three weeks, leaving a slightly pale spot at the previous site of tumor, which also disappeared in two months. There has been no recurrence after ten months.

Mrs. W., bookkeeper in recorder's office, complained of pain in the lower right lid for the past two days. There was a tender painful circumscribed mass near center of edge of lower lid, with considerable chemosis; this, of course, you will readily diagnose as hordeolum. Treatment was as follows: 15 mm. quartz application in firm contact against the swelling for 4 min. and 15 sec. over adjacent conjunctiva at approximately 10 mm. distance. No further treatment was given and the inflammation and swelling disappeared on the fourth day.

Mr. L. Upper lid was very edematous and conjunctiva congested, which caused much discomfort. Duration was only over night. Treatment was as follows: 15 mm. quartz application in firm contact for 2 min. On the second day swelling and edema were receding, leaving a firm palpable mass in the deep part of the center of the lid. This was further treated by quartz contact for 4 min. at three days intervals. The growth disappeared after six treatments.

To avoid unnecessary repetition of case histories, will say that practically all similar pathological cases coming under my observation and care are receiving this type of treatment with satisfactory results, either aborting or hastening the destructive process, which, of course, shortens the disease.

At this time I am reporting only one case of gonorrheal ophthalmia. The nature of this case and the results obtained were so striking that it seemed an error not to report it.

This patient, an adult, had been treated by a general practitioner for three or four days, with "home treatments," which consisted of boric irrigations, argyrol, etc.. When first observed at my office the

lids were so swollen and edematous that the cornea could not be seen; however, the pus, which was very abundant, managed to flow freely from between the lid margins. The smears were alive with gonococci and the patient was in intense pain, having slept but little for the past two nights. The first treatment consisted of an attempt to remove all the pus possible, after which the usual quartz application was placed against the swollen lids for 1 min. The patient was urged to go to the hospital where he was to have constant attention. His wife telephoned me late in the afternoon that he would not go to the hospital. I then informed her that I would not continue the case; however, I would talk it over with them more in detail if they would return to the office early next day, which they readily agreed to do. The next morning, things were different, the pain was practically all gone, the swelling and edema lessened so much that I could examine the corneal ulcer, which had already developed almost over the pupil. My attitude was necessarily changed; however, promised them very little unless he went to the hospital. Atropine and the sovereign remedy were used as in any other case. The quartz was used twice daily Sept. 15 to 18, once per day Sept. 19 to 24. The pus stopped on the 22nd and no organisms could be found on the 24th. The pain was of minor importance after the first treatment. The days under my care were 11 and treatments 16.

The fact that the pain and duration were so greatly lessened in comparison with the average run of cases in the hospital, is certainly worth some further investigation and consideration in this particular type of case. These infections are always rightfully considered serious, painful and of long duration and usually result in some form of permanently impaired vision. In this case the vision on Sept. 25th was 20/40 in the eye involved.

Conditions next under consideration are those of the throat. In my personal experience I have found very few pathological conditions in this field where the rays did any good and will mention only two. The first is pharyngitis—those cases where you see the thick, beefy vertical bands behind the posterior pillars. Here we must give these folds of new growth the third or fourth degree erythema. The reaction is severe but in practically all cases the patient will experience enough relief so that he will ask to be treated again, usually two to three months later.

The other condition is that of Vincent's infection. Where the patches of infection come directly in the path of the rays, the pain and duration are cut short rather markedly.

Next, and last, are the ear conditions. Those cases of external otitis in which there is an intolerable itching, are most readily relieved by the quartz application in all those canals that are straight enough to allow exposure of all the surface to the rays. Usually four to six treatments are required. In mycosis due to any kind of fungi, the Mucor species is most readily affected. In this condition the rays are absolutely specific. I will report one case, as follows:

A young married lady had a "running ear" for 18 months, with pain and deafness. She had many treatments, she clamied, both here and in Los Angeles. On examination, I found the canal packed full of "wet paper-like" material, readily diagnosed as fungus growth. The laboratory verified my diagnosis as being Mucor. The canal was cleaned very thoroughly and the quartz was easily applied to all the internal surface of the canal for 100 seconds; this was repeated the second day. The two treatments were all that was necessary to cure a condition that had existed for 18 months.

Long direct exposure of the pustular area in otitis media no doubt aids in clearing up these old chronic cases, and will lessen pain, where it exists.

Several have asked me if it pays to buy a lamp for producing the ultraviolet ray, in the treatment of eye, ear, nose and throat conditions. You may have an answer so far as I am concerned in the following summary: I have found only one condition in which the rays are specific, and that is in a rare pathology; viz: mycosis. If the rays are actually deadly to the gonococci, as they seemed to be in the case which I have related, then it will pay to have them, if for nothing else. It costs quite a little sum of money to have one of these lamps, and they must be renewed quite often unless they receive the best possible care.

Last but, possibly, not least, are the psychological features in connection with these rays. This may be the most important reason why you should spend seven or eight hundred dollars for one of these brilliantly burning lamps, the description of which today is being widely broadcast by the manufacturers and agents through lay journals, magazines and the newspapers throughout the land.

ERRORS OF REFRACTION IN CHILDREN

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Read before the Maricopa County Medical Society, April 4, 1927.

It is not my purpose in presenting this subject to give a highly scientific and exhaustive discussion of refractive errors in children, but rather to touch the salient factors in a practical way that will be of interest and value to the general practitioner.

The most common type of refractive error found in children is hyperopia. In fact, it is rare to find myopia, or near-sightedness, existing in children. Exceptions to this rule will be spoken of later.

The eyes of the infant are hyperopic; as the child grows, the anteroposterior diameter of the eyeball also increases, until, at the age of adolescence, they become em-

metropic, or nearly so. If the elongation fails to take place, or takes place only to a certain degree, there remains a hyperopia during the entire life of the individual.

There are many signs and symptoms by which hyperopia may be recognized in children. Chief among them may be mentioned blepharitis, frequent attacks of conjunctivitis, recurrent crops of styes, child complaining of blurring when he reads. Often you will note that the child will hold a book very close to his face when he reads. Your first impression would be that the child is a myope. It is much more likely that he or she is a hyerope and holds the book very close on account of a spasm of accommodation. Holding the print closer gives a larger retinal image with diffusion circles. You may have noted that certain children read very slowly, with the eyes squinted so that they look through a narrow palpebral fissure. They are usually far-sighted.

There are various functional disorders in which eye-strain, chiefly hyperopia, plays an important part. Among these may be mentioned gastro-intestinal complaints, chronic constipation, dyspepsia, chorea, etc. In addition to all the above mentioned complaints, the child may complain of headache, either frontal or fronto-temporal, which may be accompanied with nervousness. We all see the nervous child in the course of our practice, and hyperopia and hyperopic astigmatism may be playing a substantial part in causation of the trouble.

Frontal and supraorbital headache, when unilateral and when sinus conditions can be ruled out, are invariably due to anisometropia.

Vertigo may be complained of, and is apt to be found in a hyperphoria or muscle imbalance. Children complaining of car sickness will often show astigmatism with hyperphoria.

Many children thought to be subnormal and backward in their school work, upon examination will show refractive errors, the proper correction of which will result in marked improvement in school work. The detection of these cases is always a source of satisfaction to the ophthalmologist.

How can one recognize hyperopia objectively? The far-sighted eyeball looks smaller than normal. The distance between the eyes is apt to be narrow and the child may have a small face. If the eyeball is turned inward sharply, we see the equator at the outer portion of the palpebral fissure turn back sharply. The anterior chamber is shallow and the pupil is contracted in size.

Vision will usually be good, 20/20 or 20/15.

I have purposely deferred mentioning squint until now so that special emphasis may be laid on it. Three-fourths of all cases of convergent squint are due to hyperopia.

If the hyperopic child wishes to see clearly for near vision, he has to make an exceptionally strong effort of accommodation. He can do this only with the aid of strong convergence. This causes him to see double, but he will prefer this to seeing indistinctly by using the normal amount of convergence. He then learns to suppress one image, usually that of the more hyperopic eye, and a strabismus develops. This condition is usually periodic, at first, later becoming a constant and fixed deviation. The more hyperopic eye is the one that is more apt to deviate. If the refractive error of both eyes is about the same, then an alternating convergent strabismus is apt to develop. The child will fix, then, with either eye, the non-fixing eye deviating inward.

This strabismus develops between the ages of two and six, first for near objects, and later for distant objects.

From two to six years of age is the all important time in the development of convergent strabismus. How often have we been told by the mother that she has been assured by her family doctor not to worry, that the child will outgrow it in time! Such misinformation is reprehensible, to say the least, and shows absolute unconcern over the future welfare of the child. About the time the child is supposed to grow out of it, examination will reveal a convergent strabismus, fixed and unalterable, with an amblyopic eye. Operative measures after this time will probably not improve the vision materially, although the cosmetic result may be good.

The greater portion of these cases can be cured; that is, the squint can be prevented by the careful correction of the refractive error. The lenses prescribed should be a full correction and worn constantly. Atropine, and not homatropine, should be the drug used to establish cycloplegia. I prefer to skiascope at a distance of one meter, using the Shayan lamp.

I have prescribed for many children between two and three years old, although it is necessary sometimes to keep the glasses strapped on.

At this time I would like to mention that the squint we so often see in children under two years is not a true convergent strabis-

mus, but due to the fact that these children have not yet learned to exert the exact amount of convergence. The strabismus which is of great interest to the oculist occurs between the ages of two and six years.

Myopia, as opposed to hyperopia, is an acquired disease. It is rare, exceedingly rare, in the early school age, but on the increase in our high school and university students. Especially has this been noted in Germany.

One may recognize this condition by the large, prominent eyeball——it may appear "pop-eyed." The interpupillary distance is usually rather wide. There may be a divergent squint. Distant vision is poor, dependent upon the degree of myopia. The patients are usually book-worms. The myopic child is usually literary in taste and is apt to rank high in his class. As a general rule he has little desire for athletics, baseball, football, etc.

The myopic eyeball is longer than usual. The eyeball at the equator does not turn sharply back, as does the hyperopic eye but continues almost straight back. The anterior chamber is apt to be deep and the pupil large. The refraction power of the eye may be greater than normal; for example, an increased curvature of the cornea, increased curvature of the lens, or a lens density greater than normal.

Because the child sees indistinctly at a distance, he will often squeeze his lids together. This causes him to see through a narrow slit and will often increase remarkably the vision for distant objects. Sometimes the child may not complain, and only routine examination will reveal the fact that his vision is half normal or even less. Or he may complain of sensitiveness to light and floaters in the vitreous. Occasionally, however, close work will tire the eyes, due to the disproportion between the convergence and the accommodation.

Myopia, when once begun, is apt to become progressive, particularly in school children. Coincident with the progression, come certain destructive changes in the choroid, retina, and vitreous, which may, in later life, lead to blindness.

Among the causes of myopia may be mentioned: (a) A certain hereditary predisposition, which may manifest itself in poor hygienic surroundings and after acute illness, especially the eruptive fevers; (b) poor illumination; (c) too close approximation to work, bending too low over desks and getting work too close to the eyes.

As prophylactic treatment, the following may be mentioned: (1) Careful periodic examination of vision in school children—a vision of 20/20 does not necessarily mean a normal eye, as I have mentioned before; (2) correct posture, which can be more easily obtained by the proper desks, etc.; (3) proper illumination.

Treatment of the condition, when once discovered, is, of course, wearing of the proper glasses constantly. The prescribing of these glasses requires the attention of a competent oculist and should in no case be left to the optician. A full correction must be insisted upon.

As to the treatment of hyperopia and hyperopic astigmatism, it goes without saying that the proper glasses should be prescribed. In general the more completely the hyperopia is corrected, the better it is. Children will accept their full correction quite readily, especially if prescribed while the effects of the cycloplegia are wearing off.

In this short paper astigmatism will not be gone into in detail. Suffice to say that it is either congenital or acquired, and apt to be bilateral. If of high degree, it is often associated with other defects in the development of the eye. Treatment, of course, consists of correction by the proper glasses.

In closing, I might mention that we are fast becoming a nation of glassed people and rightly so. The child of today has a far better chance to secure and maintain good evesight than the child of yesterday. A great opportunity for the family physician, in raising the standard of vision among our school children, lies in the recognition of errors of refraction and insistence upon examination by competent oculists.

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ASTHMA OF NASAL ORIGIN

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As with all my colleagues, no doubt, each winter there fall into our hands, nose and, especially, sinus cases who have made the rounds. Many of these have been operated on numerous times. One of my patients last month had had nine distinct nose operations. These people have been worked upon by the best, or, at least, the reputed best men of the country: by some of the

leading lights of New York, Chicago, Cleveland, Ann Arbor, and Mayo's Clinic. I mention this to show that it was not poor technic that occasioned failure, but a wrong conception of the desired results.

It has been a coincidence, no doubt, that a great number of these nose cases that I have seen in the last year were asthmatics, their operative work having been done for the relief of this condition. One patient, (the case with nine operations) dates her asthma from her first nose operation. We are apt to take into consideration the prejudices of our patients and question a great many things that they tell us. In this particular case I not only believe what the patient told me to be a fact, but will go even further than she went and say that I am quite confident that her nose surgery caused the asthma. This only forges another link in the reasoning that has brought many to the conclusions to which I am leading. Understand that I realize that there are many instances of asthma; that not all nasal asthmas are due to the factor which I have in mind; but a great number of them, many more than are suspected, are due to this factor. One of the first things that we determine in dealing with asthma, is whether or not the patient has nasal polypi. Polypi stand out very largely in the minds of many of us as a direct etiological factor in this condition.

I originally thought that we had asthma in these cases, not because of the polypi, which were there, but because these same polypi indicated underlying sinus disease. Even here I have changed my mind to a certain degree. I often change my mind about these things medical. I wonder if I do more than the average doctor. Two years ago, I discovered the cure for hay fever. The reason that you have not seen this in the Journal of the American Medical Association, is that I again changed my mind. Call it coincidence or what you will, I operated on three consecutive cases who, at the time of operation, were suffering from hay fever. They all cleared up for that season—absolutely cleared up. I again started a line of reasoning and came to the conclusion that they had become relieved by an inoculation from their own secretions —that the opening up of the veins and capillaries in the nose had given sufficient absorption from the secretions to alleviate their condition. The next two which I did, not because the patient needed a nasal operation, particularly, but for the cure of their hay fever, resulted in failure. I was terribly disillusioned.

But to get back to my text, I will mention some individual cases. Owing to the circumstances surrounding the case, I will make special mention of Mrs. T, in the northern part of our own state. Doctor Brownfield had done some very extensive sinus work on this patient, for the purpose of curing her asthmatic condition, a few weeks previous to his death. Two months later, I saw the patient and she still had her asthma just as bad. High up on the right side of the nose there was an absolutely tight point of contact between the lateral wall of the nose and the septum. The only thing I did—the only thing that was left to do—was to correct this condition. The last time I saw this patient she had had no more asthma.

This winter I have had three cases in the same category. I wish to mention especially Mrs. H, a tourist from Chicago, referred to me by Doctor Bannister. Nine times this lady had her nose operated upon. I am not sure what all the operations were for. Here is the picture I found on this patient's nose. Adhesions, probably post-operative, between the anterior end of the middle turbinate and the septum on the left; on the right side, complete adherence of the septum to the nasal wall, in an area, I should say, one inch in diameter. This patient stated that her asthma resulted from her first nasal operation. No doubt the adhesions resulted from the first operation. Carrying the argument a little further, according to the rules of logic, I believe that her asthma was a direct result of the operative procedures. This is one of the three cases more or less identical that I have seen in the last few months. Incidentally, I will mention that this last patient and the entire series of cases were cured of their asthma. The following are the things that I have been leading up to, and, in conclusion, particularly wish to emphasize.

1. Asthma is more frequently due to nose pathology than is generally supposed.
2. Polypi are causative factors, not necessarily because they indicate underlying sinus disease, but because of the mechanical irritation.
3. The greatest and outstanding factor is the presence of false points of contact or actual adherence of tissue, most frequently between the turbinates and the septum.
4. Asthma is frequently caused by post-operative adhesions; and the temporary character of many good results can be explained by the formation of these adhesions.

TUBERCULOUS MENINGITIS: CASE REPORT

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El Paso, Texas

Read before the El Paso County Medical Society, March 7, 1927.

Meningitis carries with it such a grave prognosis that it is very important to make a definite diagnosis with as little chance of error as possible. This fact is emphasized by the following case report. The patient whose record will be presented was treated by us for pulmonary tuberculosis for a period of two years with satisfactory improvement, up till the time of her acute illness beginning Sept. 16, 1926. During my absence, my associate, Dr. Hendricks, treated the first episode of the patient's alarming illness from September 16th, until Nov. 1st. He told me that he believed the patient had meningitis. The history of her illness was as follows:

The patient, an inmate of a convalescent home, was taken suddenly ill on the afternoon of September 26th, and, according to the proprietress of the home, had something resembling a convulsion, in which her eyes rolled backwards, limbs jerked and body twitched. In a few hours she was so ill that a special nurse was called, and her record states that patient was suffering with severe pain in the back of head; the pain and vomiting were so severe that two drams of papine and three-fourths grain of morphine were given in six hours (by hypo.), without obtaining relief. During the following four days, severe pain in the head, nausea, vomiting, blurred vision with partial coma on September 20th, were the chief symptoms. Temperature ranged from 102 to 104, with pulse irregular and rapid. Beginning Sept. 22nd, symptoms gradually abated, and during the several weeks following Sept. 25th, there was no temperature rise, except during a two day attack of tonsillitis. Pain continued, with administration of one and a half grains of morphine every twenty-four hours.

Dr. Hendricks, out of consideration for this patient's limited finances, had not had spinal fluid examined, but was done on Nov. 2nd, with the following report (Dr. Turner): Pressure 10, clear, cell count five; globulin not increased; sugar not increased; Wassermann negative with six, twelve and fifteen drops; examination was, therefore, negative for evidences of encephalitis or meningitis.

On Nov. 4th, I called to see the patient and was rather surprised to note that she did not appear to be desperately ill. Her face was flushhed, her pupils reacted to light and were of the same size; there appeared to be no rigidity of the neck muscles and the other neurological reflexes appeared to be negative. The record as noted above was given me. The patient was perfectly rational and with the assistance of the special nurse gave me the history somewhat as recorded below by Dr. Crouse.

On Nov. 12th, the symptoms and amount of morphine remaining the same, spinal fluid was again examined with the following report (Dr. Waite): Cell count one, faint trace of globulin, Wassermann negative.

On Nov. 17th, Dr. Crouse was called in consultation, the record of his examination is given in full:

Mrs. L. A. C., widow, age 27, multiplex operator, two years in El Paso, in rest home; usual weight 115-118 lbs. Born in Arkansas.

Chief Complaint: Outside of pulmonary tuberculosis, headaches, basal in type.

Family History: Father living; mother died at 52 of pulmonary tuberculosis.

Past History: Usual childhood complaints. First menstruated at 14, regular, painful; headaches precede and sometimes follow: duration, three to four days; clots at times; slight leukorrhea; backaches with periods. No bladder trouble. Bowels regular. Appetite good. Scarlet fever in 1916. Never strong. Appendectomy, clean, in 1923. Last winter fell down ten or twelve steps; tripped; not unconscious, no concussion. Married in 1923; husband lived three months and died of typhoid; patient never pregnant. No earaches. Headaches started last May, came and went. Ordinarily, temperature normal.

Present Illness: Started Sept. 16th, with high temperature, sore throat. Two weeks before had temperature for two days of 102. Some headache and delirum. At times, unconscious. Pain ample to have morphine ever since, with spells of unconsciousness, delirium, twitching all over the body. Eyes turned up in all spells; grinding of teeth. Does not now run fever, as a rule. Chart shows temperature Sept. 17th to 23rd, with high point 104. Vomited constantly for a week. On Nov. 11th and 12th, had spinal punctures, after which temperature rose to 101.3, with chills and fever on the 13th. Manometric pressure 10; fluid negative.

Physical Findings: Pulse 176. Lungs: right lung shows latent rales following cough from apex to fourth rib up in front, and left lung to angle of scapula behind. Tonsils: bad, follicular. Teeth: no pyorrhea. Heart: apex beat in the fifth inside and one and a half inches below nipple; heart normal in size; accentuated second sound over pulmonary. Liver: normal lines. Gall bladder: Murphy and hook tests negative. Stomach: no pulsating abdominal aorta; normal position; increased in size. Kidneys: normal in size; no masses in abdomen. Skin: marked dermatographia; acne; large lipoma over the third dorsal; no capillary changes in chest wall. Neurological: pupils equal in size, no irregularity; react somewhat sluggishly to light; all superficial and deep reflex tests negative. Joints: negative. Spine perfectly straight. Glands negative, except toxic goiter, left lobe. Hysterogenic zones exaggeratedly positive.

On Nov. 25th, Dr. Schuster examined the eye grounds and reported as follows:

The right vision is 15/30; the left vision 15/40. There is a moderate degree of hyperopic astigmatism. The lids, larchrymal apparatus, external muscles, function normally. Cornea clear. Pupillary reaction normal to light and accommodation. Media clear. The fundus shows a suggestion of pallor of the nasal portions of the disc, while the temporal portion shows a moderate degree of hyperemia, with a suggestion of elevation of the disc margin. The arteries are somewhat narrowed and the veins somewhat tortuous. Otherwise no definite pathology is found, except for the slight hyperemia of the discs. The fields of vision show a concentric contraction for white and colors, but the retina shows abnormal fatigue, so there is a tendency for the fields to contract spirally as we repeat the test; this latter, of course, is suggestive of hysteric condition.

The nose and throat are normal and the sinuses clear on transillumination. Her hearing is normal The drums are slightly retracted. The labyrinth tests (caloric and rotation) gave normal responses for nystagmus and past-pointing.

Conclusion: There is a slight hyperemia of both discs which might be associated with an intracranial condition. I would, therefore, suggest an x-ray examination of all the sinuses, especially the posterior group and hypophysical region. She should be ob-

served from time to time and her eye grounds gone over.

On Nov. 28th, patient went to Dr. Schuster's office for more complete examination. Dr. Schuster's findings, while suggestive, were not absolutely conclusive for intracranial lesion.

About Nov. 17th patient was told that all her examinations indicated that she would recover and that the amount of morphine must be reduced; she was now taking one and a half grains daily. The patient readily agreed and in less than one week's time, she was off of morphine, but had to take bromides in rather large doses for a few week's time.

SUMMARY

From the record it is evident that the patient's illness began on Sept. 16th with something like a convulsion and for nine days, up until Sept. 27th, she ran a fever as high as 104°. She had vomiting, pain in the neck and head so severe that she was only partially relieved by three-fourths of a grain of morphine in addition to two drams of papine. Her vision was disturbed, at times she was unable to talk and unconscious at one time for a period of six hours. Did she have tuberculous meningitis? If not, what did she have? She recovered to such an extent that, in the second part of her illness when she was treated by me and examined by consultants, the symptoms and examinations pointed strongly to a hysterical element, but no one can deny, after reading the record, that this tuberculous patient suffered an acute and severe illness from Sept. 16th to Sept. 25th, the outstanding symptoms of which appeared to be due to meningitis.

DISCUSSION

1. In reviewing the case, it is evident that a laboratory examination of the spinal fluid of this patient should have been made during the acute illness between Sept. 16th. and Sept. 25th. However, the early symptoms of this case were so typical of tuberculous meningitis that, as stated, Dr. Hendricks, out of consideration for his patient's finances did not have laboratory examinations of spinal fluid made at that time.

2. It also seems probable that after the acute symptoms had subsided the patient and nurse probably magnified symptoms of pain and nausea; that morphine was kept up for a longer period of time than absolutely necessary.

3. Patients do occasionally recover from tuberculous meningitis and this patient may be such a case.

Two cases of tuberculous meningitis in adults, with recovery, are reported by Gehrcke and by McMahon. In Gehrcke's patient, thirty-three years of age, diagnosis was established by smears and animal inoculation of the spinal fluid. The case was characteristically chronic; during the sixth week there appeared focal symptoms—paralysis of the face, arms and legs, and motor aphasia. After this the meningitis became remittent. There was also encephalitis. Repeated lumbar punctures showed the favorable course of the case.

Its remittent character, with several exacerbations, was also a striking feature of McMahon's case. The patient was a white female, twenty-eight years of age, who had been treated for pulmonary tuberculosis with positive sputum. Her meningitis began with headaches, malaise and fever. All the classical symptoms developed as usual. During the eleven months the patient had exacerbations of fever and meningeal symptoms with afebrile intermissions. Except once, the spinal fluid at lumbar puncture was never under increased tension. During the febrile periods the patient would be in coma, from which she could be aroused with difficulty. After almost thirteen months the patient was pronounced cured of her meningitis, and her pulmonary condition was definitely improved. Nine months later she was reported well and doing her housework. Two specimens of spinal fluid, removed at intervals during the first two months were positive for tubercle bacilli by animal inoculation. A third, at five months, was negative.

REFERENCES

Gehrcke, A.: Can a Case of Tuberculous Meningitis Heal? Beitr. Klin. d. Tubert. 61: 310, 1925.

McMahon, B. F.: Review from Tuberculous Meningitis. American Review Tuberculosis 216, vol. 13.

DISCUSSION

DR. C. M. HENDRICKS stated that all symptoms in the early phase of the case pointed to meningitis.

DR. R. B. HOMAN stated that there had been a few cases of recovery in tuberculous meningitis and that he concurred in the diagnosis of this case.

DR. J. A. RAWLINGS stated that he did not believe it a case of meningitis. The onset was too sudden, too violent, though his observation of meningitis was limited to the disease in children, he felt the case strongly suggested encephalitis.

DR. G. WERLEY was not convinceed from the history presented that this was a case of meningitis. Hysteria could not entirely be eliminated, in fact, hysteria was strongly suggested because, largely, doses of opiates failed to relieve the headache.

DR. F. P. MILLER said that a number of cases of tuberculous meningitis had been reported cured, but in carefully reviewing the histroy of these cases, the diagnosis had not been authenticated to his satisfaction. He was rather skeptical about the recovery from this disease, feeling that recovery pointed strongly to a diagnosis of encephalitis.

DR. HARRY LEIGH said that encephalitis symptoms are variable and do not run true to form. He cited Holt as saying that tubercle bacilli could be found in every case of tuberculous meningitis if the spinal fluid is examined repeatedly.

DR. W. W. BRITTON recited a case, the early

phase of which resembled influenza, in a case of advanced pulmonary tuberculosis. There was improvement for four or five days, when the patient developed nausea and vomiting. The temperature and pulse dropped to subnormal and slowly the case developed the classical symptoms of tuberculous meningitis.

DR. E. J. CUMMINS asked if meningitis would seriously be considered in this case if it had not had tuberculosis. He believed that a study of several spinal fluid analyses would invariably suggest meningitis when it existed.

DR. ORVILLE EGBERT stated that failure to note the neurological findings from day to day in the early phase of the case, the absence of psychoses, and early and frequent examination of the spinal fluid precluded the possibility of making a diagnosis of tuberculous meningitis in this case.

DR. E. B. ROGERS asked the question how it was possible to prove diagnosis of tuberculous meningitis in a recovered case.

DR. LAWS, in closing stated that he never had seen conclusive proof of a diagram of tuberculous meningitis in a case that had recovered, however, he felt the history of the early part of the illness in this case strongly suggestd the diagnosis.

BOOK REVIEWS

This Business of Operations, by James Radley; foreword by J. M. Withrow, M. D.; Chief of Staff, Christ Hospital, Cincinnati; The Digest Publishing Company; 1927.

Mr. Radley is truly a philosopher; here is his spirit portrayed: "Knowing he was going to win and not giving a hang anyhow if he lost." If the lay public in even a reasonable minority reads and properly appreciates this little book, the author will be a great benefactor.

To be sick, in the best way, is both an art and a science, in which all too few have been trained. The business of being sick, better, the business of getting well, deserves keen attention.

The story is told in charming style. The author is an artist in word painting.

International Clinics. A quarterly of Illustrated Clinical Lectures and especially prepared Original Articles on Various Subjects—by leading members of the medical profession throughout the world; edited by Henry W. Cattell, A. M., M. D., Philadelphia, with the Collaboration of 17 prominent medical men of the world; Volume III, 36th Series, 1926; J. B. Lippincott Company, London and Philadelphia, 1926.

This volume has a goodly number of high type essays on subjects of interest in various phases of medical science.

The outstanding contribution is a biographical sketch of the late Right Honorable Sir Clifford Allbutt, K. C. B., M. D., F. R. S., written by Sir Humphrey Rolletson of Cambridge, England. The biographer says the Royal College of Physicians, of London, has had to mourn, in recent years, the loss of three great physicians, Sir Wm. Osler, (1849-1919), Sir Norman Moore (1847-1922) and Sir Thomas Clifford Allbutt (1836-1925).

Linking the name of Allbut with that of Osler is sure to impress the American reader with the greatness of Allbutt. His was not only a long life but an active one. He was a prolific writer—an authority. His association with Paget, Bence-Jones, Raynaud, Teale Broadkent, Foster Mackenzie Moore, Osler and others, placed him a galaxy of medical stars, all notable for brilliance. That Allbutt's lustre is not dimmed by such company is testimony of his greatness. He was a scholar physician. Posterity will undoubtedly hold him as one of the medical stars of all time.

The biography of Allbutt is sufficient to recommend this volume. There is also other choice material.

The Surgical Clinics of North America — Mayo Clinic Number—October, 1926, issued serially, one number every other month; Volume VI, Number 4; 274 pages with 91 illustrations; per clinic year, paper $12.00, cloth $16.00 net; Philadelphia and London; W. B. Saunders Company.

A highly interesting list of subjects is discussed in this issue. To the man interested in physiological studies the article by George M. Higgins and Frank C. Mann, entitled "Considerations of the Gallbladder with Reference to the Process of Emptying," will have a peculiar appeal. Their conclusions, which seem to be wholly warranted, are to the effect that the gall-bladder empties itself through the cystic duct by contraction of its own intrinsic musculature and that secretory pressure from the liver and intra-abdominal pressure, are only minor factors in emptying the vesicle. The sphincter of the common duct is not an inhibitor to the flow of gallbladder bile.

Among other interesting subjects are: Analgesic Effects of Roentgen Rays; Actinomycosis of the Tongue; Acute Inversion of the Uterus; Suture of Bloodvessels; Retrotracheal Goitre; The Colon as a Urinary Receptacle; Hirschsprung's Disease; and others.

The surgeon will find a world of helpful material in The Surgical Clinics of North America.

The Surgical Clinics of North America, (issued serially, one number every other month); Volume VI, Number 3, Chicago Clinic Number — August, 1926; 325 pages with 101 illustrations; per clinic year (February, 1926 to December 1926), paper, $12.00; cloth, $16.00 net; Philadelphia and London; W. B. Saunders Company.

There are five clinics on gastric and duodenal ulcer and other diseases of stomach and intestines; six, on bones and joints; three, on pulmonary affections; and single clinics on Hodgkin's disease, echinococcus cyst of the liver, hyperthyroidism in connection with diabetes, branchial cyst, multiple suppurative arthritis, tumors of the cauda equina, ovarian enlargements, biliary disease, and other interesting subjects.

A clinic is always interesting and instructive. The next best thing to being in actual attendance at a clinic of a competent teacher with interesting cases, is to be privileged to read of that clinic. The Clinics of North America supply to those separated from medical centers that very opportunity. This volume is valuable because of the wide variety of subjects presented.

Annual Reprint of the *Reports of the Council on Pharmacy and Chemistry* of the American Medical Association, for 1926, with the comments that have appeared in the Journal; President of the American Medical Association; Chicago.

This volume should be upon the waiting room tables of all practicing physicians.

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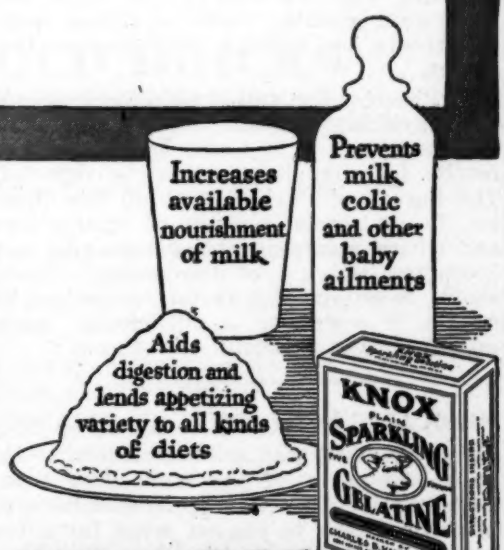

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Volume XI. JULY, 1927 No. 7

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POLIOMYELITIS IN ARIZONA AND NEW MEXICO

The appearance of infantile paralysis in the Southwest, to an unusual degree this summer, has caused considerable concern. In Arizona, the city of Phoenix has suffered most, while in New Mexico, more cases were reported from smaller cities than from Albuquerque. It is difficult to judge of the extent of the disease in Arizona, because of the irregular and peculiar methods of collecting vital statistics in that state, but there were probably twelve or fifteen cases in Phoenix and vicinity, with four or five deaths.

In Phoenix, the anti-streptoccoccic serum (poliomyelitic) has been used in several of the cases, and it is to be hoped that the results following its use may be reported. The Bureau of Public Health of New Mexico, in its special bulletin of instructions and advice regarding this disease, did not encourage the use of the serum. There should be an opportunity for comparison of results, if some one is sufficiently interested to make a careful investigation.

MEDICAL LEGISLATION IN ILLINOIS

We have followed with considerable interest the work of the Legislative Committee of the Illinois State Medical Society, in their efforts to combat some forty-five pernicious bills designed to lower the educational requirements of those who desire to treat the sick in that state. Through the cooperation of the county medical socities and individual physicians, all of these bills were defeated, although after strenuous effort and against the best organized and best financed lobby of quacks and cultists ever before focused upon any legislative body. IT CAN BE DONE, whenever and ONLY whenever, the medical profession unite and stay united in a persistent campaign to enlighten the conscientious ignorance of the average legislator on matters pertaining to health.

THE LAYMAN STUDIES SCIENCE.

'Things are too big for comprehension,' says Sir J. J. Thompson, the eminent British physicist. 'When you and I were kids' the molecule was usually regarded as quite small enough for all practical purposes, but even then there was some talk of an assumed thing, smaller still, called an atom, from the Greek "atmos," meaning indivisible. Science used that assumption as a sort of vanishing point in the matter of size, even though the atom could not be seen or measured. But that did not last long. Scientific investigation went to work vigorously on the atom and it was not many years before new processes began spattering atom parts all over the place and incidentally made its name worthless by showing that it was extremely divisible. The atom was found to be made up of electrons and protons several thousand times smaller than the atom itself, and with plenty of space in the atom for circulation of its constituents almost like the planets of our solar system. That might have satisfied the experimenters, but no! Professor Thompson asserts that we must go much deeper yet if we would find real secrets. Even the electron and proton must be split apart, and the end may not arrive even then." (Editorial in The Times Picayune of New Orleans, July 8, 1927).

When lay publications, especially daily newspapers, discuss such scientific material as in the above editorial, is it not time for physicians to give thought to the scientific part of medicine in order that they may not be surpassed in an understanding of many of our problems by that of occasional patients.

The laity is inquiring into the reason why, of many medical problems. They are reading Hygeia and other semi-scientific magazines and articles dealing with medical subjects. One patient of a Phoenix physician is a regular subscriber and reader of The Journal of the American Medical Association. There must certainly be many others. 'Tis true of course that far more of the ravings of faddists, than of good literature, is being read: but this should be taken, merely, as evidence of the laymen's hunger for medical facts. In the course of time the general reader will become cultured, if that word may be used in that connection, and discriminative in his selections of what to read for reliability.

Formerly many physicians thought, and even yet many hold, that the less the patient knows about himself and his possible illnesses, the better for all concerned. That day is passing. We should heed it.

DR. JOHN WIX THOMAS and DR. WARNER WATKINS, and families, of Phoenix, have just returned from a nine thousand mile tour of the eastern and northern states. They visited twenty-eight states, the District of Columbia and Canada during their eight weeks trips.

DR. and MRS. HARLAN P. MILLS. of Phoenix, are spending their vacation in northern New Mexico and southern Colorado, visiting the interesting archeological and historical points of that district.

DR. F. C. JORDAN, of Chandler, is now in the east taking postgraduate work in pediatrics. He will return some time in October and will be located in Phoenix, with offices at 16 E. Monroe St., where he expects to engage in the practice of pediatrics.

DR. S. I. BLOOMHARDT, of Phoenix, has moved his office from the Goodrich Building to 16 E. Monroe St. He is also building a very handsome residence in Country Club place.

DR. FRED T. FAHLEN, Superintendent of Public Health, was recently operated upon for removal of ureteral stone, following a severe attack of colic and impaction of the stone in the ureter. He is convalescing satisfactorily.

DR. FRED HOLMES, of Phoenix, is spending his usual vacation at Mormon Lake, where his exploits with the hook and line has decimated the piscine population of that resort to such an extent that an injunction against him is being threatened.

DR. SPENCER D. WHITING, of Phoenix, has returned from a vacation at Mormon Lake with a very handsome coat of tan.

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The Surgical Clinics of North America (issued serially, one number every other month.) Volume 7, Number 2 (Cancer Number—April 1927.) 231 pages with 113 illustrations. Per clinic year (February 1927 to December 1927). Paper, $12.00; Cloth, $16.00 net. Philadelphia and London; W. B. Saunders Company.

This book of 231 pages is devoted entirely to clinics and studies upon cancer from the Philadelphia members of the profession. These symposiums are highly valuable.

International Clinics—Volume II, 37th Series, 1927—J. B. Lippincott, Philadelphia & London.

President Coolidge's address before the 1927 Session of the A. M. A., together with articles upon allergic Disease and Climate, Heart Block Clinic, Multiple Myeloma, Diagnosis of Nerve Syphilis in absence of a positive Spinal Fluid, and others of importance make this volume valuable reading.

Physicians of the Mayo Clinic and Mayo Foundation. A series of 635 biographical sketches with 611 portraits and including complete and accurate data concerning the professional life of each physician prior to January 1, 1926. Octavo volume of 578 pages. Philadelphia and London; W. B. Saunders Company, 1927. Cloth, $7.00.

This volume presents an interesting informative sketch of all physicians who have been connected with the Mayo Clinic and Mayo Foundation up to January 1, 1926. Perhaps the most valuable part of the book is the list of the writings of each physician. It is interesting that Charles Mayo is credited with 215 articles and William Mayo with 315.

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For more than twenty years the American Medical Association has been publishing a directory of the medical profession. Ten editions have appeared, the last one (1927) being just off the press.

The first edition (1906) contained 128,171 names of physicians in the United States, its dependencies and Canada. The new Tenth Edition includes 164,002 names. There is an increase of 2,644 over the previous edition. If the Directory were merely a list of names and addresses of physicians it would not have great significance. That information is valuable, but of far greater value is the fact that the Directory gives proof of the right of each physician listed to practice medicine—namely, time and place of graduation and year of license. In addition, society membership, specialty and office hours are included. Capital letters indicate those who are members of their county medical society, and a special symbol follows the names of those who are Fellows of the American Medical Association.

The information concerning hospitals and sanitariums of the United States is another valuable and extensive feature. Descriptive data appears following the names of 7,816 hospitals and sanitariums such as type of patients handled, capacity, and name of superintendent or director.

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tice in that state; members of licensing board; state board of health; names of city, county and district health officers; officers of constituent state associations and component county and district medical societies. The book, in short, is one vast source of reliable data concerning the personnel of the medical profession and the institutions and activities closely related to it. It contains 2,575 pages and is sold for $15.00. Published by the American Medical Association, 535 North Dearborn Street, Chicago.

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The Fifth Hospital Clinics—Editorial Board Joseph H. Fobes, M. D., Milton J. Raisbeck, M. D., D. S. D. Jessup, M. D., and Charles F. Tenny, M. D.; Illustrated; Paul B. Hoeber, Inc., Publishers; New York City; 1927.

This is a collection of papers published in various journals, in connection with cases in the hospital, together with material which has been presented at the semi-monthly staff meetings. There are 41 papers on a variety of subjects. Among those which attracted the attention of the reviewer were the subjects of asthma, heart murmurs, a urea test for kidney function, surgical treatment of pulmonary tuberculosis, physotherapy in dermatology, convulsions in infancy, operation for hernia and others. The book shows clearly the value of hospital staff meetings and the importance of publishing the reports.

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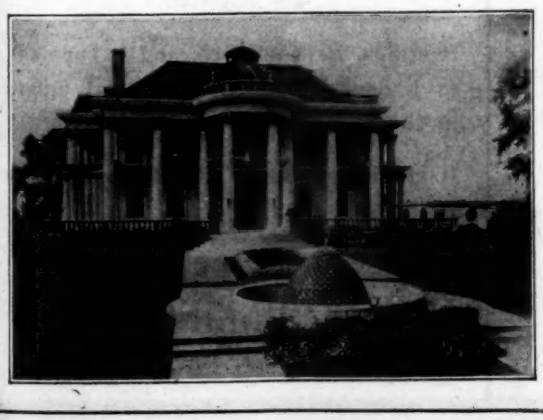

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Sanitarium: 8100 Independence Road, Kansas City.

New and Nonofficial Remedies, 1927; American Medical Association, 535 N. Dearborn Street, Chicago.

This book contains descriptions of all articles accepted by the Council of Pharmacy and Chemistry of the American Medical Association, up to January 1, 1927.

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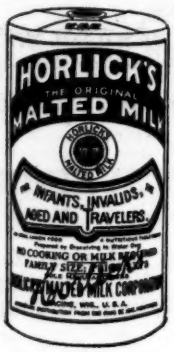

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